ROCHESTER MV CARBURETOR

CONTENTS

DESCRIPTION AND OPERATION

GENERAL DESCRIPTION

The Monojet carburetor is a single bore downdraft carburetor using a triple venturi in conjunction with a plain tube nozzle.

The main venturi is 1-5/16″ in diameter and the throttle bore is 1-11/16″.

Fuel flow through the main metering system is controlled by a main well air bleed and a variable orifice jet. A power enrichment system is used to provide good performance during moderate to heavy accelerations and at higher engine speeds.

The idle system incorporates a hot idle compensator (automatic trans. only) to maintain smooth engine idle during periods of extreme hot engine operation.

The model MV incorporates an automatic choke system. The vacuum diaphragm units are mounted externally on the air horn and connect to the thermostatic coil lever through a connecting link.

The automatic choke coil is manifold mounted and connects to the choke valve shaft by a rod.

An integral, pleated-paper fuel inlet filter is mounted in the fuel bowl behind the fuel inlet nut to give maximum filtration of incoming fuel.

Other features of the Monojet carburetor include an aluminum throttle body for decreased weight and improved heat distribution and a thick throttle body to bowl insulator gasket to keep excessive engine heat from the float bowl. The carburetor has internally balanced venting through a vent hole in the air horn, which leads from the float bowl into the bore beneath the air cleaner.

The carburetor model identification is stamped on a vertical portion of the float bowl, adjacent to the fuel inlet nut. If replacing the float bowl, follow the manufacturer's instructions contained in the service package so that the identification number can be transferred to the new float bowl.

An electrically operated idle stop solenoid is used on all MV models.

Dual throttle return springs are used on all carburetors.

All carburetor models have a new idle mixture screw and limiter. The plastic limit cap permits idle mixture screw to be adjusted leaner without breaking the cap. At 24,000 miles or 24 months, if CO is high or poor idle exists, the mixture may be adjusted. If idle CO cannot be reduced to specifications or when the lean drop off method if used, the stop tang must be cut off the limit cap.

> **CAUTION:** *Do not bend the mixture screw when cutting the tang.*

To get the best idle and keep emissions within standards set by law, always follow adjustment procedures and specifications.

A bracket for the 1 MV dual throttle return springs is added to the float bowl, secured by two tapered screws installed in the upper holes of the bracket and by a flat head screw installed in the lower hole of the bracket.

> **CAUTION:** *The throttle return spring bracket screws must be installed in the proper locations.*

The throttle lever has a spun-in plastic bushing, this is used as the bearing surface for the dual throttle return springs.

The spin-in plastic return spring bushing will withstand normal cleaning time in an approved cold immersion type carburetor cleaner.

The bushing is not serviced separately and should not be removed from the carburetor throttle lever.

An Exhaust Gas Recirculation system (E.G.R.) is used on all applications to control oxides of nitrogen.

The vacuum supply port necessary to operate the recirculation valve is located in the throttle body and connects through a channel to a tube which is located at the top of the air horn casting. See Idle System for port location and operation.

Six basic systems of operation are used: float, idle, main metering, power enrichment, pump and choke.

OPERATING SYSTEMS

Float System Figure 6E-1

The float System controls the amount and level of the fuel in the carburetor float bowl. Higher than specified fuel levels can cause flooding, hard hot starting, rich fuel mixtures causing poor economy, nozzle drip at idle and stalling. Therefore, it is important that the float be set to recommended specifications.

The float system on the Monojet carburetor is located adjacent to the main venturi, It is designed so that movements such as steep hills and sharp turns will not affect proper operation by keeping an adequate supply of fuel in the bowl at all times. The float system consists of the following: a fuel inlet filter and pressure relief spring, a solid single pontoon float made of special lightweight plastic, a conventional needle and seat and a float hinge pin. The float hinge pin fits in dual slots cast in the float bowl and is held in place by compression of the air horn gasket against the upper loop of the hinge pin.

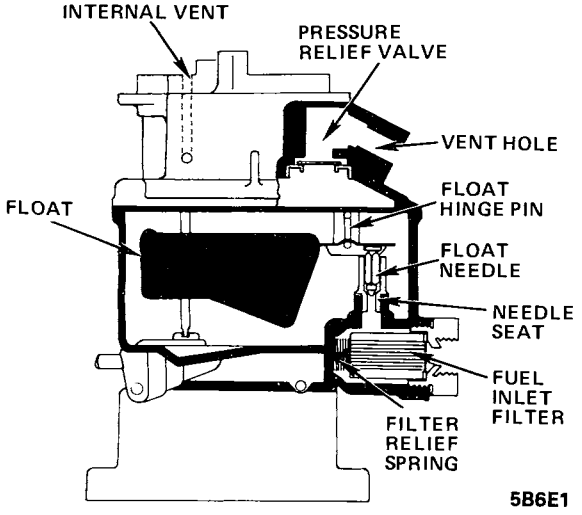

Figure 6E-1 - Float System

The float operates as follows: fuel from the engine fuel pump is forced through the paper fuel inlet filter, located behind the fuel nut, passes from the filter chamber up through the float needle seat and spills into the float bowl; as the float bowl fills with fuel, it lifts the float pontoon upward until the correct fuel level is reached in the float bowl. At this point, the float arm forces the float needle against the float needle seat, shutting off fuel flow. As fuel is used from the float bowl, the float drops downward, allowing the *float* needle to move off its seat and more fuel to enter the float bowl. This cycle continues throughout engine operation, constantly maintaining a positive fuel level in the float bowl.

The fuel inlet filter has a pressure relief spring located at the rear of the filter. It seats between the rear of the filter and the inlet casting. Should the filter become clogged from improper servicing or excess dirt in the system, the relief spring lets the filter move off its seat. This prevents complete stoppage of fuel flow to the carburetor until the filter can be replaced.

The carburetor float chamber is internally vented through a hole located in the air horn above the float chamber. The purpose of the internal vent is to balance air pressure on the fuel in the float bowl with carburetor inlet air. With this feature, a balanced air/fuel mixture ratio can be maintained during part throttle and power operation because the air pressure acting on the fuel in the float bowl will be balanced with the air flowing through the carburetor bore.

The carburetor float chamber is externally vented by a small plastic pressure releif valve located at the top of the air horn. Should excessive vapor pressure build up in the float bowl during periods of hot engine idle or hot soak, the valve will be pushed off its seat, allowing the pressure to be relieved, thereby preventing fuel from being forced from the float bowl into the engine.

Idle System Figure 6E-2

The purpose of the idle system is to control fuel mixtures to the engine during idle and low speed operation. The idle system is needed during this period because air requirements of the engine are not great enough to obtain efficient metering from the main discharge nozzle and venturi system.

The idle system consists of a removable idle tube, idle passages, idle channel restriction, idle air bleeds, slotted off-idle port, vapor canister purge ports, exhaust gas recirculation (E.G.R.) ports and passages idle mixture adjusting needle and the idle mixture discharge hole.

During curb idle, the throttle valve is held slightly open by the idle stop solenoid. The small amount of air, which passes between the correct engine idle speed. Since the engine requires very little air and fuel for idle and low speed operation, fuel is mixed by direct application of engine manifold vacuum to the idle discharge hole just below the throttle valve. With the idle discharge hole in a very low pressure area and the fuel in the float bowl vented to atmosphere, fuel flows through the idle system as follows:

Atmospheric pressure forces fuel from the float bowl down through the main metering jet into the main fuel well where it is picked up and metered at the lower tip of the idle tube. It passes up the idle tube and is mixed with air at the top of the idle channel through the idle air bleed hole. The air/fuel mixture passes over through the cross channel and then downward through the calibrated idle channel restriction where it is further metered. The mixture continues down the idle passage past the lower idle air bleed hole and off-idle discharge port just above the throttle valve, where it is again mixed with air. the air/fuel mixture then moves downward past the idle mixture needle and out through the idle discharge hole into the carburetor bore. Here it mixes with the air passing around the

slightly open throttle valve and then continues through the intake manifold into the engine cylinders as a combustible mixture.

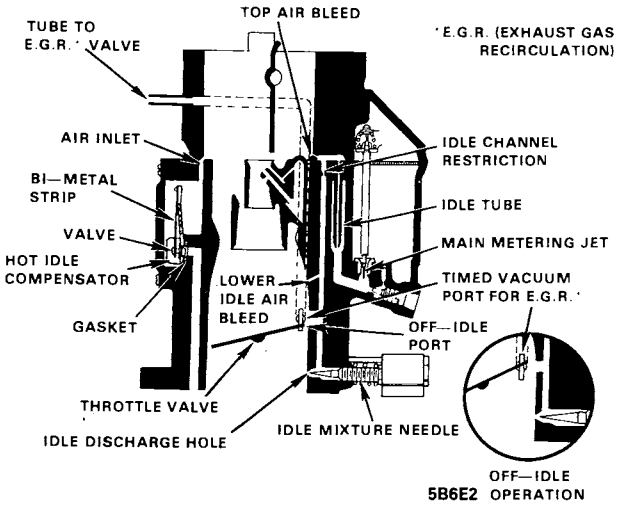

Figure 6E-2 - Idle System

OFF-IDLE OPERATION

As the throttle valve is opened from curb idle to increase engine speed, additional fuel is needed to combine with the extra air entering the engine. This is accomplished by the slotted off-idle port. As the throttle valve is opened, it passes the off-idle port, gradually exposing it to high vacuum below the throttle valve. The additional fuel from the off-idle port mixes with the increased air flow past the opening throttle valve to meet increased engine air and fuel demands.

Further opening of the throttle valve causes increased air flow through the carburetor bore, which causes sufficient pressure drop in the multiple venturi to start fuel delivery from the main discharge nozzle. The off-idle port fuel discharge does not cease at this transfer point but rather diminishes as fuel flow from the main discharge nozzle increases. In this way, the systems are so designed that they combine to produce a smooth fuel flow at all engine speeds.

The lower idle air bleed is used strictly as an air bleed during idle operation. It supplies additional air to the idle circuit for improved atomization and fuel control at low engine speeds.

The same air bleed is used as an additional fuel feed at higher engine speeds to supplement main discharge nozzle delivery during operation of the main metering system.

The timed spark port has two tubes which supply vacuum during the off-idle and part throttle operation of the carburetor. One tube is connected by a rubber hose directly to the distributor to supply spark vacuum advance during off idle operation. The other tube leads to the purge valve on the vapor canister to provide a means of pulling fuel vapors from the canister during periods of higher air flow through the carburetor bore. A limited amount of canister purge is also provided by a separate tube which leads from the canister to the PCV valve hose connection.

EXHAUST GAS RECIRCULATION SYSTEM (E.G.R.)

An exhaust gas recirculation (E.G.R.) system is used on all models to control oxides of nitrogen emissions. The E.G.R. valve is operated by a vacuum signal taken from the carburetor throttle body.

A vacuum supply tube installed in the carburetor air horn connects by a passage through the float bowl to the timed vertical port in the throttle body bore. This provides a vacuum signal to the E.G.R. valve in the off-idle and part throttle operation of the carburetor. The purpose of the E.G.R. system is to supply a metered amount of exhaust gases to the combustion mixtures and lower combustion temperatures, Thereby reducing oxides of nitrogen during these ranges of engine operation.

HOT IDLE COMPENSATOR

The hot idle compensator, see Figure 6E-2, with automatic transmission only, is located in a chamber on the float bowl casting, adjacent to the carburetor bore, on the throttle lever side of the carburetor. Its purpose is to offset enrichening effects caused by changes in air density and fuel vapors generated during hot engine operation.

The compensator consists of a thermostatically controlled valve, a bi-metal strip which is heat sensitive, a valve holder and bracket. The valve closes off an air channel which leads from a hole inside the air horn to a point below the throttle valve where it exits into the throttle body bore.

Normally, the compensator valve is held closed by tension of the bi-metal strip and engine vacuum. During extreme hot engine operation, excessive fuel vapors in the carburetor can enter the engine manifold causing richer than normally required mixtures. This can result in rough engine idle and stalling. At a pre-determined temperature, when extra air is needed to offset the enrichening effects of fuel vapors, the bi-metal strip bends and unseats the compensator valve, uncovering the air channel leading from the compensator valve chamber to the throttle body bore. This allows enough air to be drawn into the engine manifold to offset the richer mixtures and maintain a smooth engine idle. When the engine cools and the extra air is not needed, the bi-metal strip closes the valve and operation returns to normal.

The compensator valve assembly is held in place by the dust cover over the valve chamber. A seal is used between the compensator valve and float bowl casting.

In order to insure proper idle adjustment when the engine is hot, the compensator valve must be closed. To check this, plug the compensator inlet hole inside the air horn bore (pencil can be used). If no drop in engine rpm is noted on a tachometer, the valve is closed; if the valve is open, leave plug in hole when adjusting idle or cool engine down to a point where the valve automatically closes for proper idle adjustment.

> **CAUTION:** *Always remove plug used in inlet hole after completing idle adjustment, otherwise, the compensator will not operate.*

MAIN METERING SYSTEM FIGURE 6E-3

The main metering system supplies fuel to the engine from off-idle to wide open throttle operation. It feeds fuel at all times when air flow through the venturi is great enough

to maintain efficient fuel flow from the main discharge nozzle. The triple venturi stack-up used in the Monojet carburetor is very sensitive to air flow, which results in a finer and more stable metering control from light to heavy engine loads.

The main metering system consists of a main metering jet, mechanical and vacuum operated metering rod, main fuel well, main well air bleeds, fuel discharge nozzle and triple venturi.

The main metering system operates in the following manner:

As the throttle valve is opened beyond the off-idle range, allowing more air to enter the engine manifold, air velocity increases in the carburetor venturi. This causes a drop in pressure in the main venturi which is increased many times in the double boost venturi. Since the lower pressure (vacuum) is now in the smallest venturi, fuel flows from the main discharge nozzles in the following manner:

Fuel in the float bowl passes between the tapered metering rod and the main metering jet where it is metered and flows on into the main fuel well. In the main well the fuel is mixed with air from the air bleed at the top of the well and another air bleed which leads into the main well from the discharge nozzle cavity. After the fuel in the main well is mixed with air from the air bleeds it then passes up the discharge nozzle where it sprays into the small boost venturi. At the boost venturi, the fuel mixture then combines with air entering the engine through the carburetor bore to provide the correct air/fuel mixtures to the engine for efficient combustion.

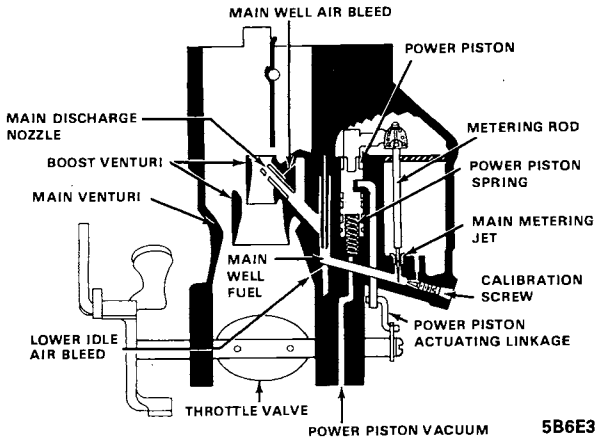

Figure 6E-3 - Main Metering System

Fuel flow to the main discharge nozzle is controlled by a tapered metering rod which is actuated by linkage connected directly to the throttle shaft. As the throttle valve is opened from idle position, the tapered metering rod is gradually raised out of the main metering jet orifice. Fuel flow from the main discharge nozzle is controlled by throttle opening and the depth of the metering rod in the main metering jet orifice. With the fuel metering mechanically controlled by the throttle valve angle, it is possible to maintain very accurate mixture ratios throughout part throttle to wide open throttle operation. An initial metering rod adjustment is required to set the depth of the rod in the main metering jet.

CAUTION: *It should be noted here that there is a supplementary fuel feed passage in the bottom of the float bowl adjacent to the main metering jet. Fuel is picked up from the float bowl and passes through a calibrated hole, past a calibration screw and on into the same fuel passage which leads from the main metering jet to the main fuel well. The purpose of the adjustable fuel feed is to allow the factory to refine part throttle calibration to meet very accurate air/fuel mixture ratios. This adjustment is made using very sensitive instrumentation and the screw should not be tampered with or it will require complete float bowl or unit replacement.*

POWER ENRICHMENT SYSTEM FIGURE 6E-4

The vacuum operated power enrichment system is used to slightly enrichen mixture ratios during moderate to heavy loads during acceleration. The necessary enrichment is obtained by movement of a spring loaded vacuum piston which senses changes in manifold vacuum. The amount of enrichment is controlled by the clearance between the groove in the power piston and the diameter of the power piston drive rod.

During part throttle and cruising ranges, manifold vacuum is sufficient to hold the power piston down against spring tension. The upper part of the groove in the power piston is held down against the top side of the drive rod. This places the main metering rod lower in the jet for maximum economy. On moderate to heavy accelerations, manifold vacuum drops and the power piston spring pushes the power piston up so that the lower edge of the slot in the power piston strikes the bottom side of the drive rod. This moves the tapered metering rod slightly upward and out of the main metering jet, allowing more fuel to flow through the jet, enrichening the fuel mixture slightly.

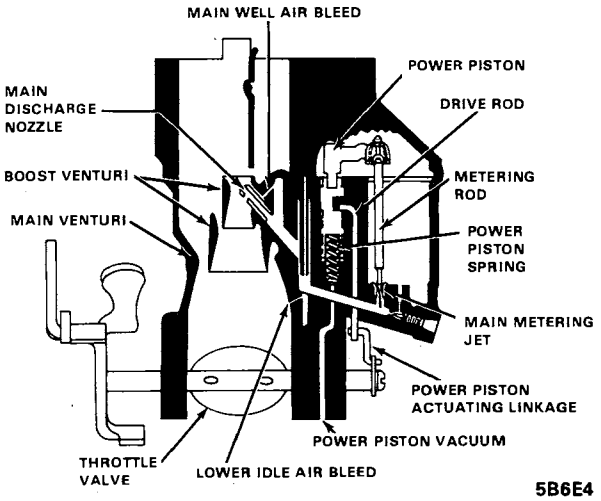

Figure 6E-4 - Power Enrichment System

ACCELERATING PUMP SYSTEM FIGURE 6E-5

Extra fuel for smooth, quick acceleration is supplied by a double spring loaded pump plunger. Rapid opening of the throttle valve, when accelerating from low speed, causes

an immediate increase in air flow through the carburetor bore. Since fuel is heavier than air, it requires a short period of time for fuel flow through the main discharge nozzle to catch up with the air flow. To avoid leanness during this momentary lag in the fuel flow, the accelerator pump furnishes a metered quantity of fuel which is sprayed into the air stream. This mixes with the increased air flow to supply the extra fuel needed until the main discharge nozzles can feed the fuel required.

The accelerating pump is located at the side of the main fuel bowl, adjacent to the venturi area. It consists of a spring loaded pump plunger and pump return spring operating in a fuel well. The pump plunger is connected by linkage directly to a lever on the throttle shaft.

When the pump plunger moves upward in the pump well, as happens during throttle closing, fuel from the float bowl enters the pump well through a slot in the side of the pump well and flows past the synthetic pump cup seal into the bottom of the pump well. The pump cup is a floating type (the cup moves up and down on the pump plunger head). When the pump plunger is moved upward, the flat on the top of the cup unseats from the flat on the plunger head and allows free movement of fuel through the inside of the cup into the bottom of the pump well. This also vents any vapors which may be in the bottom of the pump well so that a solid charge of fuel can be maintained in the fuel well beneath the plunger head.

When the throttle valve is opened, as happens during acceleration, the connecting pump linkage forces the pump plunger downward. The pump cup seats instantly and fuel is forced through the pump discharge passage, where it unseats the pump discharge check ball and passes on through the passage to the pump jet located at the top of the float bowl, where it sprays into the boost venturi area.

The pump plunger is spring loaded; the upper duration spring is balanced with the bottom pump return string so that a smooth sustained charge of fuel is delivered during acceleration.

The pump discharge check ball prevents any pull over or discharge of fuel from the pump jet when the accelerator pump is not in operation. It also keeps the pump discharge passage filled with fuel to prevent pump discharge lag.

The pump does not require adjustment.

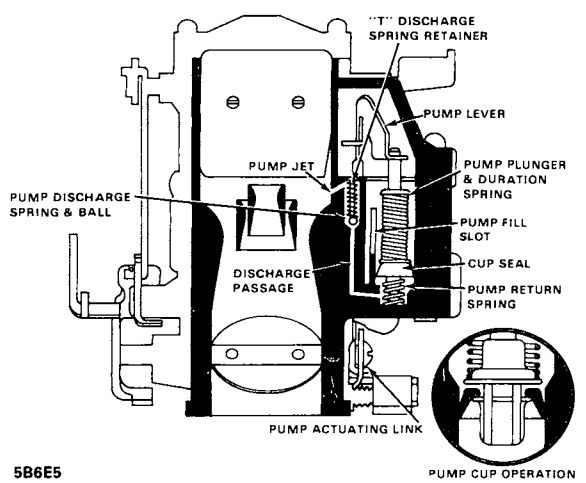

Figure 6E-5 - Accelerating System

CHOKE SYSTEM FIGURE 6E-6

The purpose of the choke system is to provide a richer mixture for cold engine starting and operation. Richer than normal mixtures are required because vaporized fuel has a tendency to condense on cold engine parts. This occurs on the inside area of the intake manifold and cylinder heads, thereby, decreasing the amount of combustible mixture available in the engine cylinders.

The model MV carburetor is equipped with a fully automatic choke control. The thermostatic coil is mounted on the exhaust manifold and is connected by a link to the lever on the choke valve shaft. The vacuum break units are diaphragm operated and externally mounted on the air horn casting.

The choke system operates as follows: when the engine is cold, prior to starting, depressing the accelerator pedal to the floor opens the carburetor throttle valve. This allows tension from the thermostatic coil to close the choke valve and also rotates the fast idle cam so the high step is in line with the fast idle cam follower on the throttle lever. As the throttle is released, the fast idle cam follower comes to rest on the high step of the fast idle cam, thus providing enough throttle valve opening to keep the engine running after cold start. During cranking, engine vacuum below the choke valve pulls fuel from the idle circuit and main discharge nozzle. This provides adequate enrichment for good cold starts.

When the engine starts, manifold vacuum is transmitted through a vacuum channel to the primary vacuum break diaphragm unit mounted on the air horn casting. This moves the diaphragm plunger until it strikes the cover which, in turn, opens the choke valve to a point where the engine will run without loading or stalling. This is called the vacuum break position.

The auxiliary vacuum break unit is used to open the choke valve to a nearly wide open position during warmer temperatures above 90°F. This prevents too rich a mixture when starting a cold engine during warm temperatures due to choke coil cooling, causing the choke valve to be too far closed.

The auxiliary diaphragm unit is controlled by a vacuum switch which is operated by engine temperature. When the engine is started at temperatures above 90°F., the vacuum switch opens and allows manifold vacuum to be applied to the auxiliary vacuum break diaphragm. The diaphragm unit pulls the choke valve to a nearly open position overcoming choke coil tension. At the same time the fast idle cam drops so that the fast idle cam follower tang rests on the lowest step of the fast idle cam. This maintains some fast idle until the engine warms up. When the engine is warmed up the choke coil pulls the choke valve fully open and the fast idle cam rotates so the fast idle cam follower tang drops off the low step, at which point the engine will run at curb idle speed.

As the engine warms up, the thermostatic coil is heated and gradually relaxes its spring tension so that air velocity through the air horn can continue to open the choke valve. This continues until the engine is warm. At this point, the choke coil tension is completely relaxed and the choke valve is wide open.

The fast idle cam has graduated steps so that fast idle

engine speed is lowered gradually during the engine warm up period. The fast idle cam follows rotation of the choke valve. When the choke valve is completely open and the engine is warm, the fast idle tang on the throttle lever will be off the steps of the fast idle cam. At this point, the idle screw or idle stop solenoid controls normal engine idle speed.

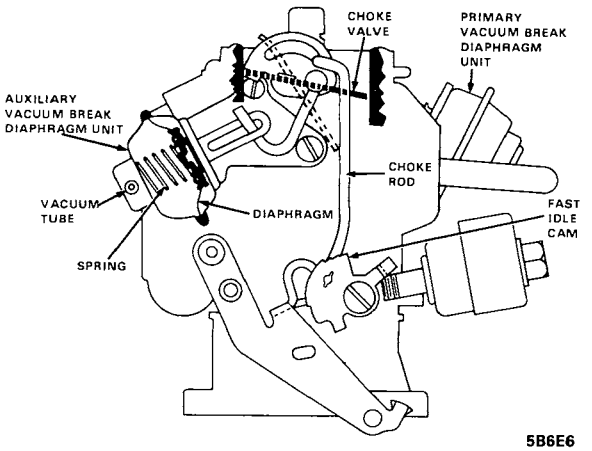

Figure 6E-6 - Choke System

An unloader mechanism is provided should the engine become flooded during the starting period. The unloader partially opens the closed choke valve to allow increased air flow through the carburetor to lean out the overly rich mixtures. This is accomplished by depressing the accelerator pedal to the floor so that wide open throttle is obtained. When this is done, a tang on the throttle lever contacts an arm on the fast idle cam and forces the choke valve partially open. The extra air leans out the fuel mixture enough so that the engine will start.

DIAGNOSIS

MODEL MV

NOTE: *These problems can be caused by many things other than carburetor. Check the following engine tune-up items before proceeding with carburetor items.*

Engine compression, spark plugs, ignition timing, fuel pump pressure and volume, plugged fuel filters or fuel lines and intake manifold for vacuum leaks. Make sure all emission control parts are installed and operating properly. This includes all emission systems solenoids and hoses where used.

Problems of roughness, slight hesitation, surge or poor fuel economy should not be diagnosed before an allowable engine break in period.

MV - SINGLE BARREL

Condition	Possible Cause	Correction
Engine cranks (turns over) will not start or starts hard when cold.	Improper starting procedure used.	Check with the customer to determine if proper starting procedure is used, as outlined in the owner's manual.
	No fuel in gas tank.	Add fuel. Check fuel gauge for proper operation.
	Choke valve not closing sufficiently when cold.	Adjust the choke thermostatic coil.
	Choke valve or linkage binding or sticking.	Realign the choke valve or linkage as necessary. If caused by dirt and gum, clean with automatic choke cleaner. Do not oil choke linkage. If parts are replaced, check adjustments.
	No fuel in carburetor.	1. Remove fuel line at carburetor. Connect hose to fuel line and run into metal container. Remove the high tension coil wire from center tower on distributor cap and ground. Crank over engine-if there is no fuel discharge from the fuel line, check for kinked or bent blow out with air hose, reconnect line and check again for fuel discharge. If none, replace fuel pump. Check pump for adequate flow.

Condition	Possible Cause	Correction
		2. If fuel supply is o.k., check the following: a. Inspect fuel filters. If plugged replace. b. If filters are o.k., remove air horn and check for a bind in the float mechanism or a sticking float needle. If o.k., adjust float as specified.
	Engine Flooded. To check for flooding, remove the air cleaner, with the engine off, and look into the carburetor bores. Fuel will be dripping off nozzles and/or carburetor will be very wet.	Check to determine if customer is using proper carburetor unloading procedure. Depress the accelerator to the floor and check the carburetor to determine if the choke valve is opening. If not, adjust the throttle linkage and unloader, as specified.
	Carburetor flooding.	Before removing the carburetor air horn, use the following procedure which may eliminate the flooding. 1. Remove the fuel line at the carburetor and plug. Crank and run the engine until the fuel bowl runs dry. Turn off the engine and connect fuel line. Then restart and run engine. This will usually flush dirt past the carburetor float needle and seat. 2. If dirt is in fuel system, clean the system and replace fuel filters as necessary. If excessive dirt is found, remove the carburetor unit. Disassemble and clean. 3. Check float needle and seat for proper seal. If a needle and seat tester is not available, apply mouth suction to the needle seat with needle installed. If the needle is malfunctioning, replace with a factory matched set. 4. Check float for being loaded with fuel, bent float hanger or binds in the float arm. A solid float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float), replace the float assembly. 5. Adjust float.
Engine starts and stalls.	Engine does not have enough fast idle speed when cold.	Check and re-set the fast idle setting and fast idle cam.

Condition	Possible Cause	Correction
	Choke vacuum break unit is not adjusted to specification or unit is malfunctioning.	1. Adjust vacuum break to specification. 2. If adjusted O.K., check the vacuum break for proper operation as follows: On the externally mounted vacuum break unit, connect a piece of hose to the nipple on the vacuum break unit and apply suction by mouth or use Tool J-23417 to apply vacuum. Plunger should move inward and hold vacuum. If not, replace the unit. On the integral vacuum break unit remove cover and visually check diaphragm and vacuum channel. If diaphragm is leaking, replace. Always check the fast idle cam adjustment before adjusting vacuum break unit.
	Choke coil rod out of adjustment.	Adjust choke coil rod.
	Choke valve and/or linkage sticking or binding.	1. Clean and align choke valve and linkage. Replace if necessary. 2. Re-adjust if part replacement is necessary.
	Idle speed setting. on decal in engine compartment.	Adjust idle speed to specifications
	Not enough fuel in carburetor.	1. Check fuel pump pressure and volume. 2. Check for partially plugged fuel inlet filter. Replace if dirty. 3. Remove air horn and check float adjustments.
	Carburetor flooding. Check by using procedure outlined under carburetor flooding.	1. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If needle is malfunctioning, replace with a factory matched set. 2. Check float for being loaded with fuel, bent float hanger or binds in the float arm. A solid float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy check with known good float, replace the float assembly. 3. Check float adjustments. 4. If excessive dirt is found in the carburetor, clean the fuel system and carburetor. Replace fuel filters as necessary.

Condition	Possible Cause	Correction
Engine idles, rough and stalls.	Idle speed setting.	Re-set idle speed per instructions on decal in engine compartment.
	Manifold vacuum hoses disconnected or improperly installed.	Check all vacuum hoses leading into the manifold or carburetor base for leaks or being disconnected. Install or replace as necessary.
	Carburetor loose on intake manifold.	Torque carburetor to manifold bolts (15 lb. ft.).
	Intake manifold is loose or gaskets are malfunctioning.	Using a pressure oil can, spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, tighten or replace the manifold gaskets or carburetor base gaskets as necessary.
	Hot idle compensator not operating (where used).	Normally the hot idle compensator should be closed when engine is running cold and open when engine is hot (approx. 140°F. at comp.) replace if malfunctioning.
	Carburetor flooding. Check by using procedure outlined under "carburetor flooding".	1. Remove air horn and check float adjustment. 2. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If the needle is malfunctioning, replace with a factory matched set. 3. Check float for being loaded with fuel, bent float hanger or binds in the float arm. NOTE: A solid float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float), replace the float assembly. 4. If excessive dirt is found in the carburetor, clean the fuel system and carburetor. Replace fuel filters as necessary.
Engine hesitates on acceleration.	Malfunctioning accelerator pump system. A quick check of the pump system can be made as follows: With the engine off, remove air cleaner and look into the carburetor bores and observe pump stream, while briskly opening throttle valve. A full stream of fuel should emit from pump jet and strike near the center of the venturi area.	1. Remove air horn and check pump cup. If cracked, scored or distorted, replace the pump plunger. 2. Check the pump discharge ball for proper seating and location. The pump discharge ball is located in a cavity next to the pump well. To check for proper seating, remove air horn and gasket and fill cavity with fuel. No "leak down" should occur. Restake and replace check ball if leaking. Make sure discharge ball, spring, and retainer are properly installed.

Condition	Possible Cause	Correction
	Dirt in pump passages or pump jet.	Clean and blow out with compressed air.
	Fuel level	Check for sticking float needle or binding float. Free up or replace parts as necessary. Check and reset float level to specification.
	Leaking air horn to float bowl gasket.	Torque air horn to float bowl using proper tightening procedure.
	Carburetor loose on manifold.	Torque carburetor to manifold bolts, (15 lb. ft.).
No power on heavy acceleration or at high speed.	Carburetor throttle valve not going wide open. (Check by pushing accelerator to floor).	Check for proper installation of carpet and jute around accelerator pedal.
	Dirty or plugged fuel filters.	Replace with a new filter element.
	Power system not operating.	Check power piston for free up and down movement. If power piston is sticking, check power piston and cavity for dirt, or scores, Check power piston spring for distortion. Clean or replace as necessary.
	Metering rod not adjusted to specification.	Adjust metering rod.
	Float level too low.	1. Check and reset float level to specification.
	Float not dropping far enough into float bowl.	Check for binding float hanger and for proper float alignment in float bowl.
	Main metering jet or metering rod dirty, plugged or incorrect part.	1. If the main metering jets are plugged or dirty and excessive dirt is in the fuel bowl. The carburetor should be completely disassembled and cleaned. 2. Check the jet or rod for being the correct part. Consult the parts list for proper usage. The last two digits stamped on the jet face are the same as the last two digits of the part number.
Engine starts hard when hot.	Choke valve not opening completely.	1. Check for binding choke valve and/or linkage. Clean and free-up or replace parts as necessary. Do not oil choke linkage. 2. Check and adjust choke thermostatic coil.

Condition	Possible Cause	Correction
	Engine flooded-Carburetor flooding.	See procedure under "Engine cranks, will not start".
	No fuel in carburetor.	1. Check fuel pump. Run pressure and volume test. 2. Check float needle for sticking in seat, or binding float.
	Leaking float bowl.	Fill bowl with fuel and look for leaks.
Engine runs uneven or surges	Fuel restriction.	Check all hoses and fuel lines for bends, kinks or leaks. Straighten and secure in position. Check all fuel filters. If plugged or dirty - replace.
	Dirt or water in fuel system.	Clean fuel tank and lines. Remove and clean carburetor.
	Fuel level.	Adjust float. Check for free float and float needle valve operation.
	Main metering rod not adjusted to specification.	Remove carburetor air horn and gasket. Adjust metering rod.
	Metering rod bent or incorrect part. Main metering jet inoperative, loose or incorrect part.	Replace as necessary. See Identification chart.
	Power system in carburetor not functioning properly. Power valve or piston sticking in down position.	Free up or replace as necessary.
	Vacuum leakage.	It is absolutely necessary that all vacuum hoses and gaskets are properly installed, with no air leaks. The carburetor and manifold should be evenly tightened to specified torque.
Poor fuel economy.	Engine needs complete tune-up.	Check engine compression. Examine spark plugs, (if dirty or improperly gapped, clean and re-gap or replace). Check and reset ignition timing. Clean or replace air cleaner element if dirty. Check for restricted exhaust system and intake manifold for leakage. Make sure all vacuum hoses are connected correctly.

Condition	Possible Cause	Correction
	Choke valve not fully opening.	1. Clean choke and free up linkage. 2. Check choke coil for proper adjustment. Reset to specifications.
	Fuel leaks.	Check fuel tank, fuel lines and fuel pump for any fuel leakage.
	Main metering rod not adjusted to specification.	Remove carburetor air horn and gasket. Adjust metering rod.
	Metering rod bent or incorrect part. Main metering jet inoperative, loose or incorrect part.	Replace as necessary.
	Power system in carburetor not functioning properly. Power valve or piston sticking in up position.	Free up or replace as necessary.
	High fuel level in carburetor or carburetor flooding.	1. Check for dirt in the needle and seat. Test using suction by mouth or needle seat tester. If malfunctioning, replace needle and seat assembly with factory matched set. 2. Check for loaded float. 3. Re-set carburetor float to specifications. 4. If excessive dirt is present in the carburetor bowl, the carburetor should be cleaned.
	Fuel being pulled from accelerator system into venturi through pump jet.	Run engine at RPM where nozzle is feeding fuel. Observe pump jet. If fuel is feeding from jet, check pump discharge ball for proper seating by filling cavity above ball with fuel to level of casting. No "leak down" should occur with discharge ball in place. Re-stake or replace leaking check ball, malfunctioning spring, or retainer.
	Air bleeds or fuel passages in carburetor dirty or plugged.	Clean carburetor or overhaul as necessary.

MAINTENANCE AND ADJUSTMENTS

MODEL MV CARBURETOR

The following external adjustments must be performed in this sequence.

Fast Idle Adjustment

1. Adjust curb idle speed with idle stop solenoid.

2. Place cam follower tang on throttle lever on high step of fast idle cam.

3. Bend cam follower tang in or out to adjust. See Figure 6E-7.

CAUTION: *Support throttle lever when bending fast idle tang.*

NOTE: *Fast idle speed setting should be made according to specifications listed on the under*

hood tune-up label or service manual using a properly calibrated tachometer.

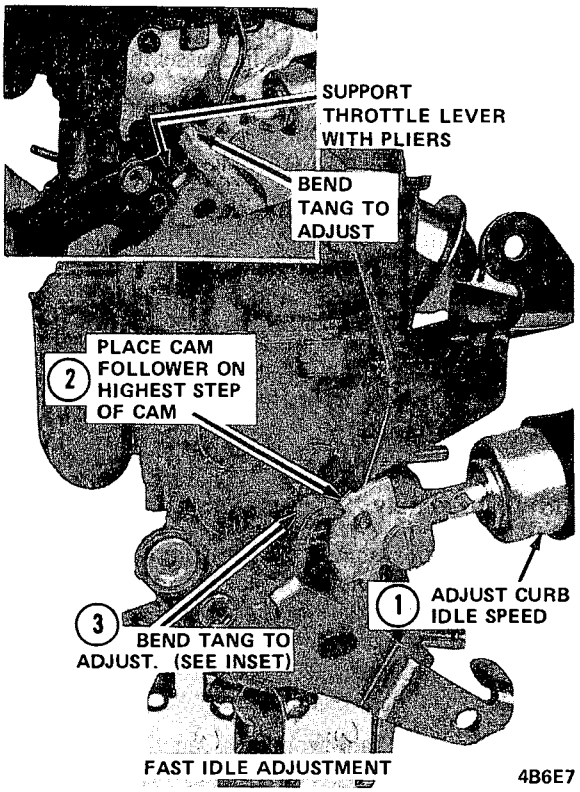

Figure 6E-7 Fast Idle Adjustment

Figure 6E-8 Choke Rod Adjustment

Choke Rod Adjustment

1. Place and hold firmly cam follower on second step of fast idle cam against shoulder of high step of cam.

2. Hold down choke valve and guage between choke valve and air horn wall.

3. Bend choke rod to obtain specified clearance. See Figure 6E-8.

Auxiliary Vacuum Break Adjustment (Figure 6E-9)

1. Place the cam follower on high step of cam.

2. Seat Diaphragm with an outside source of vacuum, (purge bleed hole must be plugged).

3. Place specified gauge between upper edge of choke valve and inner air horn wall.

4. Bend link to adjust.

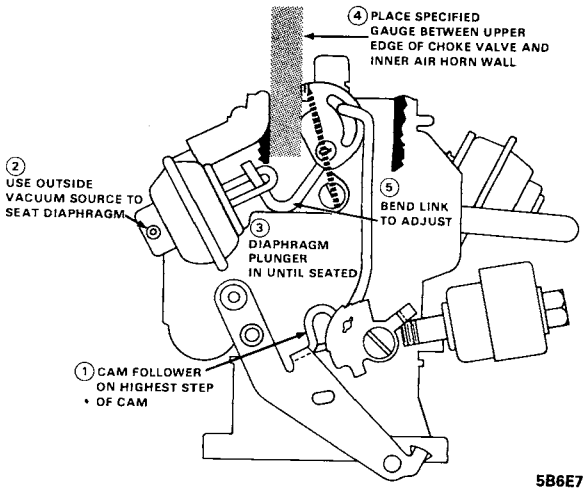

Figure 6E-9 Vacuum Break Adjustment

Choke Unloader Adjustment

1. Hold down on choke valve and hold throttle wide open.

2. Gauge between choke valve and air horn wall.

3. Bend unloader rod to obtain specified clearance. See Figure 6E-10.

Choke Coil Rod Adjustment (Figure 6E-11)

1. Completely close choke valve.

2. Pull up on choke rod to end of travel.

3. Bottom of rod should be even with top of lever. Bend rod to adjust.

Idle Stop Solenoid Adjustment

1. To set curb idle speed turn complete IDLE STOP SOLENOID ASSEMBLY to obtain specified RPM'S. (Solenoid Energized)

2. To set low idle (solenoid NOT energized) turn 1/8" hex screw (Allen screw) to obtain specified RPM's.

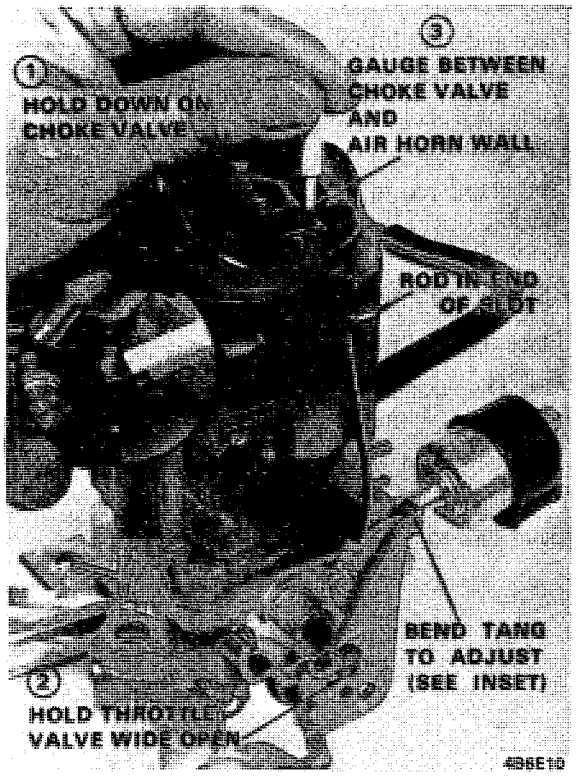

Figure 6E-10 Choke Unloader Adjustment

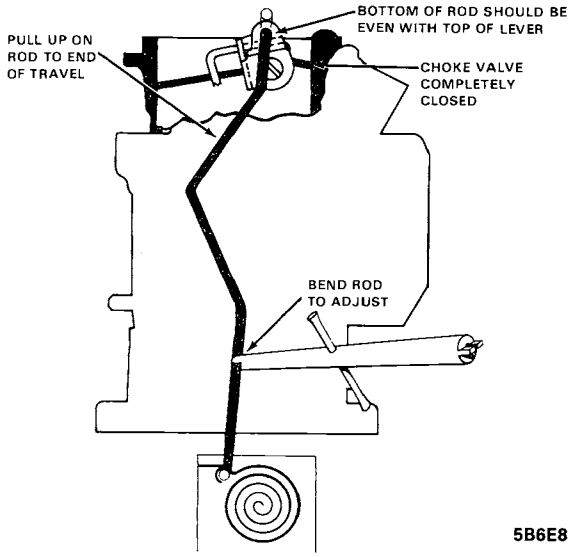

Figure 6E-11 Choke Coil Rod Adjustment

MAJOR REPAIR

IDLE STOP SOLENOID REMOVAL AND INSTALLATION

Removal

1. Remove the electrically operated idle stop solenoid from the float bowl casting by screwing outward.

CAUTION: *Do not immerse the idle stop solenoid in any type of carburetor cleaner.*

Air Horn Removal

1. Remove fast idle cam from boss on float bowl by removing attaching screw. Then remove fast idle cam from choke rod and choke rod from upper choke lever. Note position of rod and cam for ease in reassembly.

2. Remove vacuum hose from choke vacuum break diaphragm unit and tube on carburetor. Remove six air horn to float bowl attaching screws (three long and three short screws).

3. Remove vacuum break diaphragm unit from the air horn casting. Then, disconnect vacuum break diaphragm link from diaphragm plunger and the thermostatic coil lever.

4. Remove air horn by lifting straight up, invert and place on clean bench. Air horn to float bowl gasket can remain on bowl for removal later.

Air Horn Disassembly

1. Remove auxiliary vacuum break diaphragm assembly from air horn by removing two attaching screws. Remove auxiliary vacuum break diaphragm plunger from vacuum diaphragm link which is permanently attached to choke lever. The lever and link assembly can be removed, if desired, during choke valve removal.

2. Remove fast idle cam from boss on float bowl by removing attaching screw. Then, remove fast idle cam from choke rod and choke rod from upper choke lever. Note position of rod and cam for ease in reassembly. Upper choke lever is spun on end of choke shaft and cannot be removed.

3. Remove six air horn to bowl attaching screws and lockwashers (three long and three short screws).

4. Remove primary vacuum break diaphragm unit from the air horn casting. Then, remove the vacuum break hose assembly and link from slotted diaphragm plunger stem.

5. Remove air horn by lifting straight up, invert and place on clean bench. Air horn to float bowl gasket can remain on bowl for removal later.

6. If desired, the choke valve and choke shaft can be removed from air horn by first removing the thermostatic coil lever from the end of choke shaft by removing attaching screw.

Remove the two choke valve attaching screws; then, remove the choke valve and choke shaft from air horn.

The choke valve screws are held in place by Loctite or equivalent so it will be necessary to restake or use Loctite or equivalent during assembly.

7. No further disassembly of the air horn is necessary. The pressure relief valve disc need not be removed from the top of the air horn for cleaning purposes.

Float Bowl Disassembly

1. Remove air horn to float bowl gasket. Gasket is slit next to metering rod lever so that it can be slid over lever for ease in removal.

2. Remove float assembly from float bowl by lifting upward on float hinge pin. Remove hinge pin from float arm.

3. Remove float needle from seat.

4. Disconnect accelerator pump and power piston actuator lever from end of throttle shaft by removing lever attaching screw.

5. Hold down on power piston while removing lever. Power piston spring and metering rod assembly may now be removed from float bowl.

6. Remove lower end of power piston link from actuator lever by rotating until tang on rod slides out of notch in lever.

7. Remove actuator lever from lower end of accelerator pump link in same manner.

8. Push down on accelerator pump and remove actuator link by rotating until tang on rod is aligned with slot on pump plunger lever. Remove the link.

9. Remove pump assembly from float bowl.

10. Remove pump return spring and power piston spring from float bowl.

11. Remove "T" guide and pump discharge spring using needle nose pliers.

12. Pump discharge ball and idle tube can be removed at the same time by inverting the bowl.

13. Remove main metering jet from bottom of fuel bowl.

14. Remove float needle seat and gasket.

15. Remove two screws from idle compensator cover (auto. trans. only). Then remove cover, hot idle compensator and seal from recess in bowl.

16. The idle stop solenoid can be removed at this time, if desired.

17. Remove the fuel inlet nut and gasket; then, remove the filter and relief spring.

No further disassembly of the float bowl is required.

Throttle Body Disassembly

1. Invert carburetor bowl on bench and remove two throttle body to bowl attaching screws and lockwashers. Throttle body and insulator gasket may now be removed.

2. No further disassembly of the throttle body is necessary unless the idle mixture needle is damaged or the idle channels need cleaning. If necessary to remove the idle mixture needle, cut the tang from the plastic limiter cap. Do not install a replacement cap as a bare mixture screw is sufficient to indicate that the mixture has been readjusted. Due to the close tolerance fit of the throttle valve in the bore of the throttle body, do not remove the throttle valve or shaft.

CLEANING AND INSPECTION

The carburetor should be cleaned in a cold immersion type cleaner.

1. Thoroughly clean carburetor castings and metal parts in an approved carburetor cleaner. Rubber and plastic parts should not be immersed in carburetor cleaner. However, the air horn which has the plastic relief valve will withstand normal cleaning in carburetor cleaner.

2. Blow out all passages in castings with compressed air. Do not pass drills through jets or passages.

3. Examine float needle and seat assembly for wear. Install and approved matched set if worn.

4. Inspect upper and lower casting sealing surfaces for damage.

5. Inspect holes in levers for excessive wear or out of round condition. If levers are worn they should be replaced.

6. Examine fast idle cam for excessive wear or damage.

7. Check throttle and choke levers and valves for binds and other damage.

8. Check all springs for distortion or loss in tension; replace as necessary. When carburetor has been disassembled, new gaskets and filter must be used.

THROTTLE BODY

1. Invert float bowl and install new throttle body to bowl insulator gasket.

2. Install throttle body on bowl gasket so that all holes in throttle body are aligned with holes in gasket.

3. Install two throttle body to bowl attaching screws and lockwashers. Tighten even and securely to 15 lb. ft.

Float Bowl Reassembly

1. Install idle stop solenoid, if removed.

2. Auto. trans. only, install seal into recess in idle compensator cavity in float bowl, then install compensator assembly.

3. Install idle compensator cover, retaining with two attaching screws. Tighten securely.

4. Install main metering jet into bottom of fuel bowl. Tighten securely.

5. Install needle seat and gasket.

6. Install idle tube flush with bowl casting.

7. Install pump ball, spring and "T" into pump discharge hole.

8. Push down on pump discharge "T" until flush with bowl casting.

9. Install fuel filter spring, filter, inlet nut and gasket.

10. Install accelerator pump return spring.

11. Install power piston return spring into piston cavity in the bowl.

12. Install power piston actuating rod (right angle end) into slot in the power piston.

13. Install piston, metering rod and actuating rod assembly into the float bowl. End of actuating rod must enter hole in bowl. Locate metering rod into jet orifice.

14. Install pump plunger assembly into pump well with actuating lever protruding through bottom of bowl casting. Push downward on pump lever and install pump assembly drive link into slot in lower end of shaft. Ends

of drive link point inboard toward carburetor bore. Tang on upper end of link retains link to pump shaft.

15. Install lower end of pump link into actuator lever which fits on throttle shaft.

16. Install curved power piston actuator link into throttle actuator lever. End protrudes outward away from throttle bore and has tang which retains link to lever.

17. Before fastening power piston and pump actuator lever to end of throttle shaft, hold power piston assembly down and slide upper end of curved power piston actuator link into lower end of power piston actuator rod.

18. Install actuating lever on end of throttle shaft by aligning flats on lever with flats on shaft. Install lever retaining screw and tighten securely.

19. Install float needle valve into needle seat.

20. Install float hinge pin into float arm. Then install float and hinge pin into float bowl.

Float Level Adjustment Figure 6E-12

1. Hold float retaining pin firmly in place and push down on float arm at outer end against top of float needle.

2. Use adjustable "T" scale and measure distance from top of float at index point on toe to float bowl gasket surface (gasket removed).

3. Bend float pontoon up or down at float arm junction to adjust.

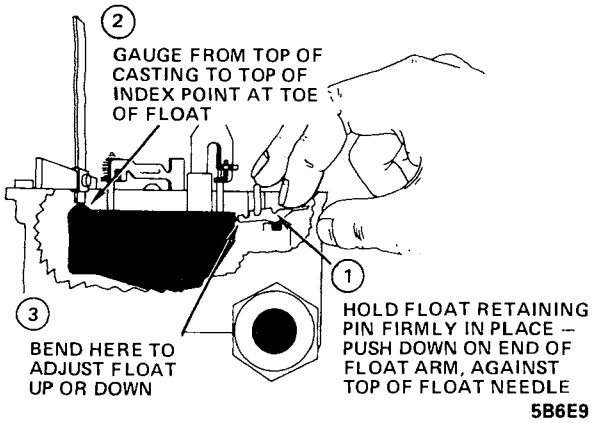

Figure 6E-12 - Float Level Adjustment

Metering Rod Adjustment Figure 6E-13

1. Open throttle valve, slide metering rod out of holder and remove from main metering jet.

2. To check adjustment, back off idle stop solenoid and rotate fast idle cam so that fast idle cam follower is not contacting steps on cam.

3. With throttle valve completely closed, apply pressure to top of power piston and hold piston down against its stop.

4. Holding downward pressure on power piston, swing metering rod holder over flat surface of bowl casting next to carburetor bore.

5. Insert gauge between bowl casting and lower surface of metering rod holder. Gauge should have a slide fit between both surfaces, as shown.

6. To adjust, carefully bend metering rod holder up or down at point shown.

7. After adjustment, install metering rod and spring assembly. Install rod in jet, then install in hanger.

8. Install air horn gasket on float bowl by carefully sliding slit portion of gasket over metering rod holder. Then align gasket with dowels provided on top of bowl casting and press gasket firmly in place.

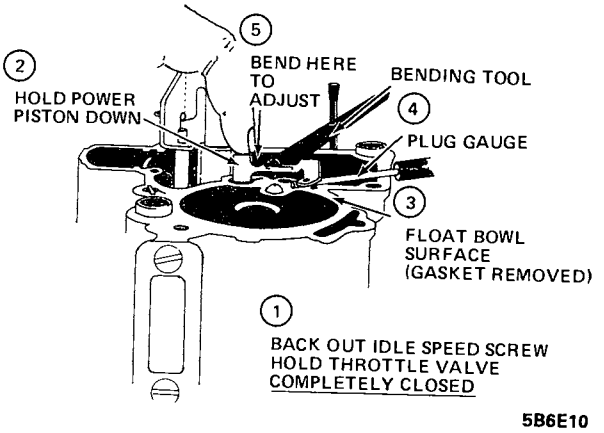

Figure 6E-13 - Metering Rod Adjustment

Air Horn Reassembly

1. Install choke shaft assembly and choke valve into air horn, if removed. Align choke valve, tighten two retaining screws and stake securely or use Loctite or equivalent.

2. Install air horn to float bowl by lowering gently onto float bowl until seated. Install three long and three short air horn to float bowl attaching screws and lockwashers. Tighten screws securely. Install the primary choke vacuum break diaphragm assembly under the two short air horn screws next to the thermostatic coil lever. Connect the choke vacuum break diaphragm link to slotted diaphragm plunger stem and install lever to the end of the choke shaft, using retaining screw. Tighten all screws securely.

3. Install the choke vacuum break diaphragm hose to the diaphragm on air horn and tube on float bowl.

4. Assemble choke rod into the slot in the upper choke lever. End of rod points away from air horn casting when installed properly.

5. Install lower end of choke rod into fast idle cam. Steps on fast idle cam should face fast idle tang on throttle lever. Install fast idle cam to boss on float bowl with attaching screw. Tighten securely.

6. Install auxiliary vacuum break diaphragm link attached to the choke lever to slot in the diaphragm plunger stem. Then, install the auxiliary vacuum break diaphragm unit to air horn using two attaching screws. Tighten securely.

1975 IMV SERVICE SPECIFICATIONS

	250 ENGINE AUTO TRANS. NON-CALIFORNIA	250 ENGINE MANUAL TRANS. NON-CALIFORNIA	250 ENGINE AUTO TRANS. CALIFORNIA
PART NO.	7045012	7045013	7045314
ADJUSTMENTS			
FLOAT LEVEL	11/32	11/32	11/32
METERING ROD	.080"	.080"	.080"
CHOKE ROD (CAM)	.160"	.275"	.230"
VACUUM AUXILIARY	.215"	.312"	.312"
VACUUM BREAK, PRI.	.200"	.350"	.275"
UNLOADER	.275"	.275"	.275"
CHOKE COIL ROD	1 ROD DIAMETER LEAN		

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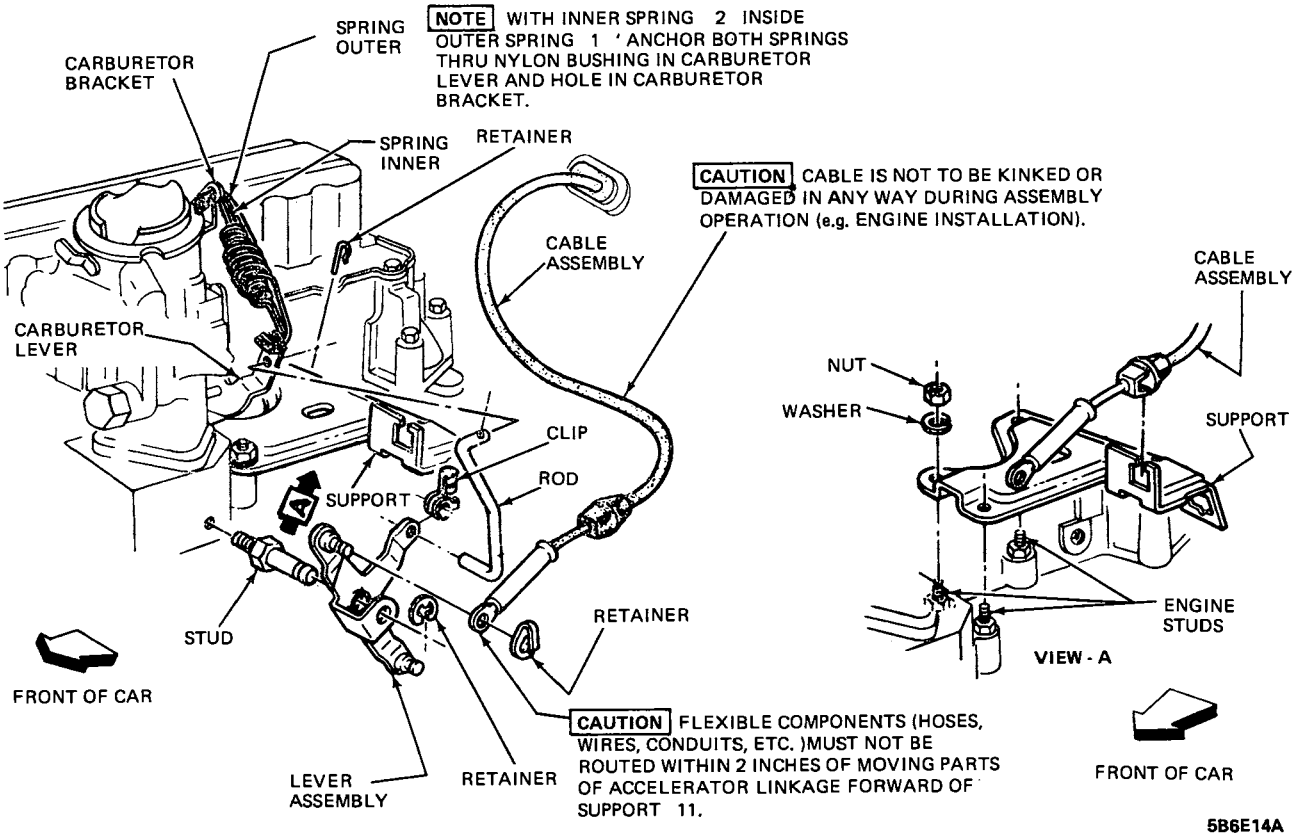
Figure 6E-14 - Specifications



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ROCHESTER 2GC CARBURETOR

CONTENTS

DESCRIPTION AND OPERATION

GENERAL DESCRIPTION

The 1975 Model 2GC is similar in operation to 1974 models except for the following design changes.

1. The carburetor units have been completely recalibrated for 1975 engines.

2. The 1975 Model 2GC is equipped with an integral choke attached to the throttle body assembly. Dual vacuum break choke units are used for improved control of carburetor mixtures during the engine warm-up. Teflon coating has been added to the primary vacuum link to reduce friction in the choke operating parts. The integral choke system with the dual vacuum break units will require new adjustment procedures and specifications.

3. The internal vent tube is replaced by a large drilled hole in the air horn which leads from inside the air horn bore to a vapor dome located in the air horn casting above the fuel in the float bowl. Along with the new internal vent hole, on some models, a mechanical bowl vent valve and vapor dome are added in the air horn for improved hot restarts. Operation is explained under Float System.

4. Vapor canister purge ports are located in the throttle body casting. The ports connect by a channel to a tube pressed into the throttle body casting which leads directly to the vapor canister. This provides adequate purge during engine operation to remove all fuel vapors from the vapor collection canister.

5. On some models a combination vacuum and mechanically operated power system consisting of two power valves, provide more accurate control of air/fuel mixtures for emission requirements. One power valve is located in the bottom of the accelerating pump well and the other in the bottom of the fuel bowl as on recent models. Operation of both systems will be described under Power System.

6. The pump system has been changed in that the pump inlet screen is removed and is replaced by raised cast in boss on the floor of the float bowl thereby preventing the entry of dirt into the accelerator pump — power valve fuel inlet passage. The pump plunger head is redesigned in that an expander spring is used beneath the pump cup to maintain good pump wall contact during pump operation. The new features described are covered under Pump System Operation.

The clip, retaining the accelerator pump plunger stem to the pump inner arm is eliminated. The end of the pump plunger stem is upset in manufacturing to provide the "clipless" retaining feature. The pump plunger assembly may be removed from the inner lever by twisting upset end with small pliers until it breaks. The service pump assembly has a grooved end and is provided with a retaining clip.

The carburetor part number is stamped on the flat section of the float bowl next to the fuel inlet nut.

Incorporated in the Model 2GC carburetor are six basic systems. They are Float, Idle, Main Metering, Power, Pump, and Choke Systems.

OPERATION OF FLOAT SYSTEM — FIGURE 6E-15

The float system controls the level of the fuel in the carburetor bowl. Fuel level is very important because it must be maintained to give proper metering through all operating ranges. As fuel is used from the carburetor bowl, the plastic float drops, moving the float needle off its seat allowing more fuel to enter in the bowl, thereby keeping the fuel level constant.

The fuel bowl is internally vented by a large drilled hole which leads from inside the air horn bore to a vapor dome above the fuel in the float bowl. On some models the float bowl is also vented to the vapor canister by a mechanically operated vent valve. This feature vents any fuel vapors formed during extreme hot engine operation outside the carburetor bores for improved hot idle and restart. The fuel vapors are stored in the vapor canister until the canister is purged during normal engine operation.

When the throttle is opened beyond the idle position the vent valve closes, restoring the carburetor float chamber to normal internal venting.

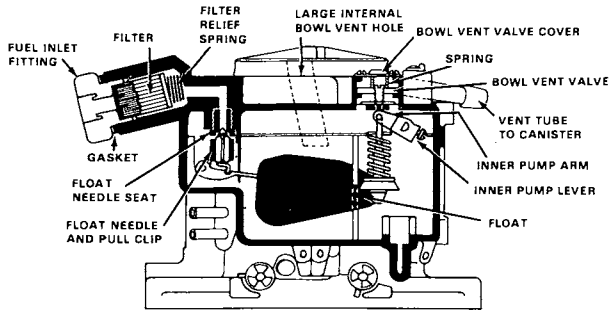

Figure 6E-15 - Float System

OPERATION OF IDLE (LOW SPEED) SYSTEM — FIGURE 6E-16

The idle system is used to provide the proper mixture ratios required during idle and low speed operation of the engine. The idle system consists of the idle tubes, idle passages, idle air bleeds, idle mixture needles, off-idle discharge ports and idle needle discharge holes.

The idle mixture needle discharge holes provide fuel for curb engine idle. As the throttle valve is opened further, the off-idle discharge ports are exposed to manifold vacuum. These ports supply additional fuel mixture for off-idle engine requirements.

The fuel vapor collection canister is purged by ports located in the carburetor throttle body.

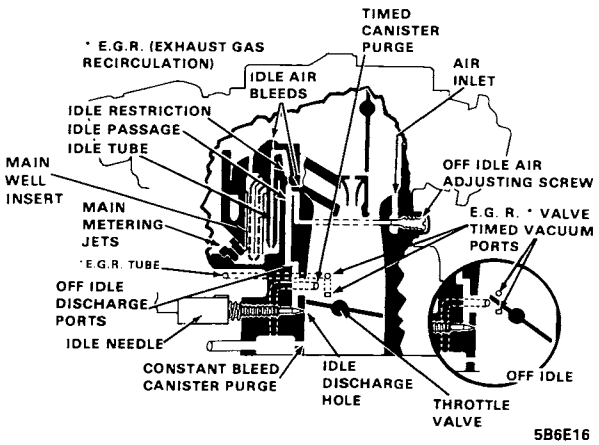

Figure 6E-16 - Idle System

EXHAUST GAS RECIRCULATION SYSTEM (E.G.R.)

An Exhaust Gas Recirculation system is used on all 1975 model vehicles to control oxides of nitrogen. A vacuum supply tube, located just beneath the spark tube on the float bowl, connects by a channel to purge ports located just above the throttle valve in the throttle body bore.

As the throttle valve is opened beyond the idle position, the E.G.R. ports are exposed to manifold vacuum which supplies a signal to the diaphragm in the E.G.R. valve. The two ports located in the throttle body bore are timed to provide just the right amount of vacuum to the E.G.R. valve diaphragm to control exhaust gases introduced into the intake manifold air/fuel mixtures.

MAIN METERING SYSTEM — FIGURE 6E-17

As the throttle valves continue to open, the edge of the valves are gradually moving away from the wall of the carburetor bore, reducing the vacuum acting on the idle needle and off-idle discharge ports which gradually decreases fuel flow from the idle system.

Fuel from the float bowl passes through the main metering jets into the main wells and rises in the main well tubes. Plastic main well inserts are used in the main wells to provide smooth fuel flow for efficient metering. This results in improved fuel control in the off-idle transfer, and part throttle range of operation. Air entering the main wells through the main well air bleeds is mixed with fuel through calibrated holes in the main well tube. The mixture moves up and out of the main discharge nozzles into a mixture (high speed) passage where more air is added. The mixture then travels down through the passage to the small venturi where it is delivered to the air stream and on into the engine intake manifold.

In order to provide sufficient enrichment to the main metering system at higher air flows, two additional fuel feeds are located in the air horn just above the choke valve. They connect directly to the fuel in the float bowl, through channels which lead directly into a tube that extends into the fuel just above the main metering jets.

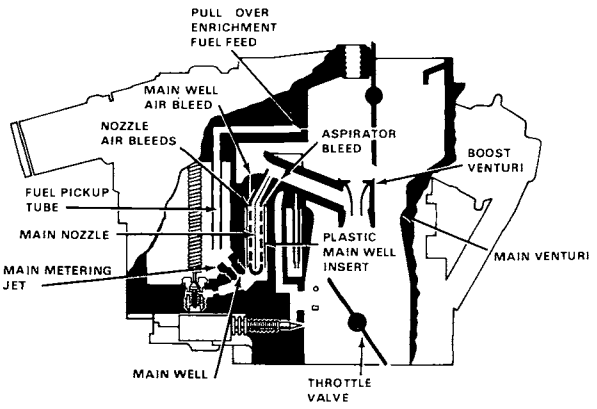

Figure 6E-17 - Main Metering System

POWER ENRICHMENT SYSTEM — FIGURE 6E-18

A combination vacuum and mechanically operated power system consisting of two power valves, provide accurate control of air fuel mixtures for light duty performance and heavy load conditions.

The conventional vacuum sensitive power piston and power valve are used for light duty power requirements.

Fuel flows from the float bowl down past the valve

plunger through a small calibrated orifice in the valve side and on into separate fuel channels leading to the power restrictions. The fuel passes through the power restrictions into the main fuel wells for desired enrichment at the main discharge nozzles. The power valve, located at the bottom of the fuel bowl, provides the correct fuel enrichment for light duty power requirements.

During moderate to heavy engine loads when additional fuel is needed for extra power, a second power valve is used. This valve, located at the bottom of the accelerating pump well, is mechanically actuated by the accelerator pump plunger.

Fuel flows past the open valve through a passage in the float bowl on into channels leading to the power restrictions to supplement fuel delivery from the vacuum operated power valve. When the mechanical power valve is opened by the accelerator pump plunger, a vacuum signal from the main discharge nozzles is transmitted to the power system and open power valve. The aluminum inlet check ball in the bottom of the pump well responds to the vacuum signal change and is lifted off the seat to supply additional fuel to the pump well for power requirements.

The mechanically operated power valve and vacuum operated power valves are not interchangeable. Use a wide blade screw driver during removal of power valves to prevent damage to the valve stem.

No special adjustments are required in the field. However, the pump rod adjustment should be checked and set to specifications during normal servicing of the carburetor to ensure correct fuel flow from the mechanical power valve system.

OPERATION OF THE PUMP SYSTEM — FIGURE 6E-19

When the throttle valve is opened rapidly, air flow and manifold vacuum change almost instantly, while the heavier fuel tends to lag behind causing a momentary leanness. The accelerator pump system provides the fuel necessary for smooth operation on rapid acceleration.

Fuel for acceleration is supplied by a double spring loaded pump plunger. The top and bottom springs combine to move the plunger so that a smooth sustained charge of fuel is delivered for acceleration.

Fuel is drawn into the pump well through the inlet check ball on the upward stroke of the pump plunger.

Downward motion of the pump plunger, as on acceleration, seats the aluminum inlet check ball and forces the fuel through the pump discharge where it unseats the pump discharge ball and passes on through to the pump jets, where it sprays into the venturi area.

An expandeer spring located beneath the pump cup ensures good contact between the lip of the pump cup and the pump well at all times.

The pump inlet screen, normally installed in the bottom of the float bowl, is removed from all models. The accelerator pump and mechanical power valve fuel inlet is a raised section on the floor of the float bowl which prevents entry of fuel into the accelerator pump power valve fuel inlet passage.

OPERATION OF CHOKE SYSTEM—FIGURE 6E-20

The Model 2GC carburetor has an integral choke housing

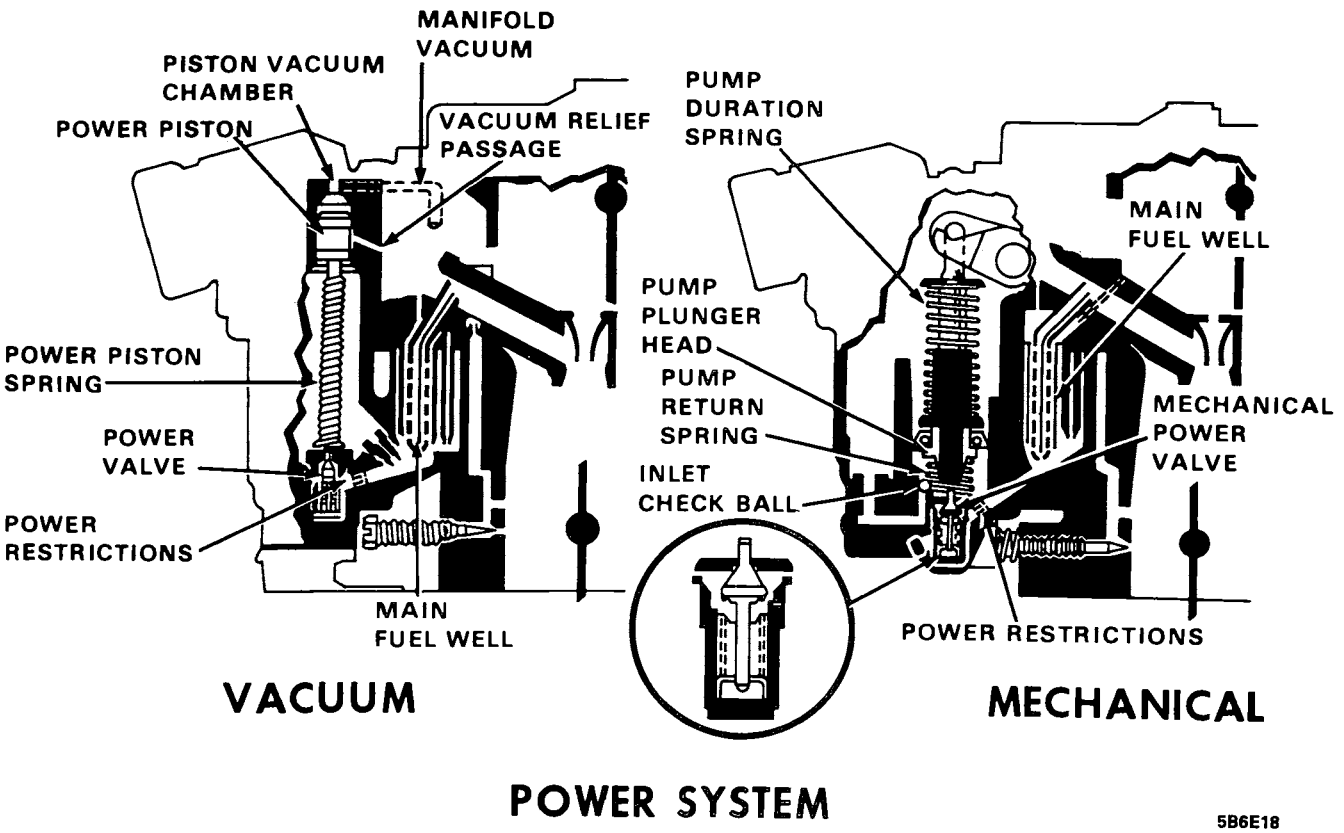

Figure 6E-18 - Power Enrichment System

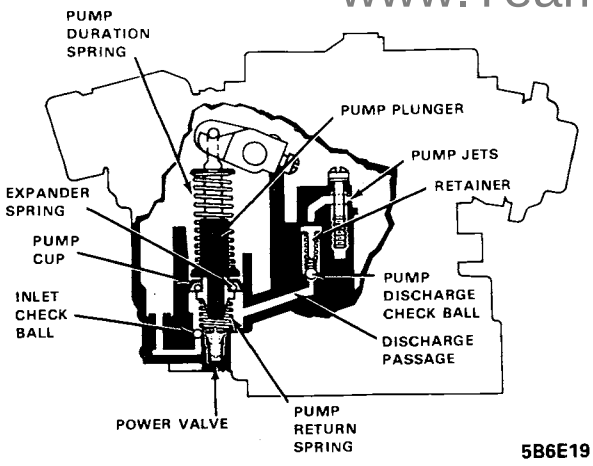

Figure 6E-19 - Pump System

and thermostatic coil assembly mounted on the carburetor throttle body. A dual vacuum break system is used for improved air/fuel mixture control during the engine warm-up period. The main (primary) vacuum break diaphragm unit is located on the throttle lever side of the carburetor. The auxiliary vacuum break diaphragm unit is located on the choke side of the carburetor and supplements operation of the main vacuum break unit.

The choke system operates as follows:

The thermostatic coil in the choke housing is calibrated to hold the choke valve closed when the engine is cold.

During engine starting, the high vacuum beneath the choke valve causes extra fuel to flow from the carburetor ports providing a rich mixture for quick engine starting. When the engine starts and is running, manifold vacuum is applied to both vacuum break diaphragm units mounted on the carburetor air horn. The two diaphragm units, connected by linkage to the choke valve, open the choke valve a predetermined amount against coil tension so that the air/fuel mixture will be lean enough so the engine will run without loading or stalling.

The main (primary) vacuum break unit opens the choke valve to a point where the engine will run without loading or stalling. When the choke valve moves to the vacuum break position, the fast idle cam will drop from the high step to a lower step when the throttle is opened.

As the engine manifold is wetted by fuel, and friction decreases in the engine after starting, the auxiliary (choke side) vacuum break diaphragm unit gradually opens the choke valve a little further to prevent stalling.

During engine operation, vacuum acting upon the diaphragm unit pulls a small amount of filtered air through a bleed hole to purge the system.

During adjustment of the auxiliary vacuum break diaphragm, it will be necessary to plug the small bleed hole with a piece of tape so that the diaphragm plunger can be held in for adjustment.

Engine vacuum supplied through an orifice in the choke housing pulls heat from the manifold heat stove into the housing and gradually relaxes coil tension which allows the choke valve to continue opening through inlet air pressure pushing on the off-set choke valve.

The choke system is equipped with an unloader feature to partially open the choke valve should the engine become flooded or loaded.

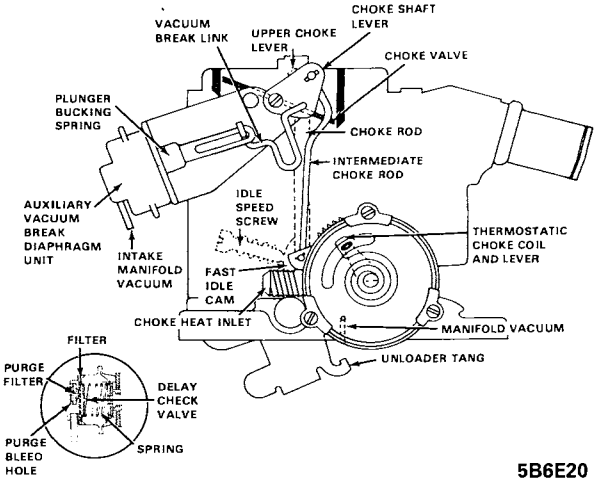

Figure 6E-20 - Choke System

DIAGNOSIS

Condition	Possible Cause	Correction
Engine cranks normally —will not start cold.	1. Improper starting procedure used.	1. Check with the customer to determine if proper starting procedure is used.
	2. Choke valve not closing.	1. If caused by dirt and gum, clean with suitable non-oil based solvent. NOTE: After any choke maintenance, check choke vacuum break settings and readjust as required. 2. Adjust the choke thermostatic coil to specification. 3. Check the choke valve and/or linkage for binds. Realign the choke valve or linkage as necessary. Replace parts as required.

Condition	Possible Cause	Correction
	3. No fuel in carburetor.	1. Remove fuel line at carburetor. Connect hose to fuel line and run into metal container. Remove the primary wire from the distributor (do not ground). Crank over engine—if there is no fuel discharge from the fuel line, test fuel pump. 2. Inspect fuel inlet filter. If plugged, replace. 3. If fuel filter is okay, remove air horn and check for a bind in the float mechanism or a sticking float needle. If okay, adjust float as specified.
	4. Engine flooded. NOTE: To check for flooding, remove the air cleaner with the engine off and look into the carburetor bores. Fuel will be dripping off nozzles and/or the carburetor bores will be very wet.	1. Check to determine if customer is using proper carburetor unloading procedure. Depress the accelerator to the floor and check the carburetor to determine if the choke valve is opening. If not, adjust the unloader as specified. 2. Check for carburetor flooding. Before removing the carburetor air horn, use the following procedure which may eliminate the flooding. Remove the fuel line at the carburetor and plug. Crank and run the engine until the fuel bowl runs dry. Turn off the engine and connect fuel line. Then restart and run engine. This will usually flush dirt past the carburetor float needle and seat. If dirt is in the fuel system, clean the system and replace fuel filters as necessary. If excessive dirt is found, remove the carburetor unit, disassemble and clean. 3. Check float needle and seat for proper seal. If a needle and seat tester is not available apply mouth suction to the needle seat with the needle installed. If the needle does not seal, replace both needle and seat. 4. Check float for being loaded with fuel, bent float hanger or binds in the float arm. A float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float), replace the float assembly.

Condition	Possible Cause	Correction
	5. Inoperative accelerator pump system. A quick check of the pump system can be made as follows: With the engine off, look into the carburetor bores and observe pump shooters while briskly opening throttle valves. A full stream of fuel should emit from each pump jet and strike the boost venturi area.	1. Remove air horn and check pump cup and expander spring. If cracked, scored, or distorted, replace the pump plunger. 2. Check the pump inlet and discharge balls for proper seating and location.
Engine cranks normally —will not start hot.	1. Improper starting procedure.	1. Check with the customer to determine if proper starting procedure is used.
	2. No fuel in carburetor.	1. Remove fuel line at carburetor. Connect hose to fuel line and run into metal container. Remove the primary wire from the distributor (do not ground). Crank over engine —if there is no fuel discharge from the fuel line, test fuel pump. 2. Inspect fuel inlet filter. If plugged, replace. 3. If fuel filter is okay, remove air horn and check for a bind in the float mechanism. If okay, adjust float as specified. 4. Check inlet needle and seat for a sticky or binding condition. 5. Check fuel bypass line for correct restriction. Pinch off bypass line to prime fuel pump.
	3. Engine flooding.	1. Check float needle and seat for proper seal. If a needle and seat tester is not available, apply mouth suction to the needle seat with needle installed. If needle does not seal, replace both needle and seat. 2. Check float for being loaded with fuel, bent float hanger or binds in the float system. Repair or replace as required. 3. Adjust float as specified.
	4. Mechanical bowl vent valve adjustment.	1. Adjust bowl vent valve to insure proper fuel bowl venting.
	5. Choke valve closing.	1. Check choke hot air tube for proper installation, routing, plugging, or binds which would restrict hot air flow to choke housing.

Condition	Possible Cause	Correction
		2. Check freedom of choke linkage allowing choke to be full open during normal engine stabilized condition. 3. Correct above items as required. If above items are determined correct, readjust choke thermostatic coil to specification.
	6. Fuel in carburetor when engine shut off. No fuel during hot start.	1. Check carburetor bowl for cracks or porous castings that leak fuel from the fuel bowl during engine off conditions.
Engine starts—will not keep running.	1. Loose, broken, or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses. Correct as necessary.
	2. Engine does not have enough fast idle speed when cold.	1. Check and reset the idle speed screw. 2. Check fast idle cam for freedom of movement and correct as required.
	3. Choke vacuum break units are not adjusted to specification or are malfunctioning.	1. Adjust both vacuum break assemblies to specification. If adjusted okay, check the vacuum break units for proper operation as follows: a. Connect a piece of hose to the nipple on the primary vacuum break unit and apply 10 in. Hg. vacuum signal using Tool J-23417. Plunger should move inward and hold vacuum. If not, replace the unit. b. Remove the vacuum break diaphragm hose and plug the complete recessed portion of the diaphragm with a piece of tape. Apply 10 in. Hg. vacuum signal using Tool J-23417. Plunger should move inward and hold vacuum. If not, replace unit.
	4. Choke valve sticking and/or binding.	1. Clean and align linkage or replace if necessary. Recheck all choke adjustments if component replacement is necessary.
	5. Insufficient fuel in carburetor.	1. Check fuel pump pressure and volume. 2. Check for partially plugged fuel inlet filter. Replace as required. 3. Check the float mechanism for sufficient float drop. Adjust as required. 4. Check inlet needle for a sticky or binding condition. Replace both needle and seat as required.

Condition	Possible Cause	Correction
	6. Engine flooding.	1. Check float needle and seat for proper seal. If a needle and seat tester is not available, apply mouth suction to the needle seat with needle installed. If needle does not seal, replace both needle and seat. 2. Check float for being loaded with fuel, bent float hanger or binds in the float system. Repair or replace as required. 3. Adjust float as specified.
Engine idles abnormally rough and/or stalls.	1. Idle speed incorrectly set.	1. Reset idle speed per instructions on label in engine compartment.
	2. Excessively lean condition caused by air leaks into carburetor bores beneath throttle valves, manifold leaks, or vacuum hoses disconnected or installed improperly.	1. Check all vacuum hoses leading into the manifold or carburetor base for leaks or being disconnected. Install or replace as necessary. 2. Check PCV system for proper operation. Replace as required. 3. Torque carburetor to manifold, and manifold bolts to specificaions. Using a pressure oil can spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, replace the carburetor or manifold gaskets as necessary.
	3. Excessively rich condition caused by carburetor flooding and/or fuel leaks.	1. Remove air horn and check float adjustments. 2. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If the needle does not seal, replace both needle and seat. 3. Check float for being loaded with fuel, bent float hanger or binds in the float arm. Repair or replace as required. 4. If excessive dirt is found in the carburetor, clean the fuel system and carburetor. Replace fuel filters as necessary. 5. Check carburetor or porous castings that leak fuel from fuel bowl to intake manifold.
	4. Excessively rich condition caused by dirty air cleaner and/or mechanical bowl vent valve adjustment.	1. Check air cleaner for excessive plugging. Replace if required. Check mechanical vent valve for proper adjustment and adjust as required.

Condition	Possible Cause	Correction
	5. Excessively rich or lean condition caused by carburetor idle mixture adjustment.	1. Adjust carburetor idle mixture as specified, in the Tune-Up section.
(NOTE: EGR system diagnosis should also be performed.)		
Inconsistent engine idle speeds.	1. Idle speed adjustment.	1. Reset idle speed per instructions on label in engine compartment.
	2. Loose, broken, or incorrect vacuum hose routing.	1. Check conditions and routing of all vacuum hoses. Correct as necessary.
	3. Erratic fast idle cam operation.	1. Check fast idle cam for freedom of operation. Clean or replace as required. 2. Check choke hot air tube for proper installation, routing, plugging, or binds which would restrict hot air flow to choke housing. 3. Check adjustment of thermostatic coil. Readjust to specification as required.
	4. Clogged or malfunctioning PCV system.	1. Check PCV system, clean and/or replace as necessary.
	5. Carburetor flooding.	1. Check float needle and seat for proper seal. If a needle and seat tester is not available apply mouth suction to the needle seat with needle installed. If needle does not seal, replace both needle and seat. 2. Check float for being loaded with fuel, bent float hanger or binds in the float arm. Repair or replace as required. 3. Adjust float as specified.
	6. Sticky accelerator linkage.	1. Inspect accelerator linkage for correct routings, kinks, binds, etc. Repair as necessary.
	7. Carburetor throttle valves binding.	1. Check carburetor throttle body for throttle valve interference or binding at the idle position. Correct as required.
	8. Mechanical bowl vent valve interference.	1. Check adjustment of bowl vent valve. Readjust as required.
	9. Malfunctioning TVS switch.	1. Perform TVS switch diagnosis. Replace as required.
(NOTE: EGR system diagnosis should also be performed.)		
Engine diesels (after run) upon shut off.	1. Loose, broken, or improperly routed vacuum hoses.	1. Check condition and routing of all vacuum hoses. Correct as necessary.

Condition	Possible Cause	Correction
	2. Curb idle speed adjustment.	1. Reset curb idle speeds per instructions on label in engine compartment.
	3. Excessively lean idle mixture caused by air leaks into carburetor beneath throttle valves, manifold vacuum leaks, or inoperative PCV system.	1. Check all vacuum hoses leading into the manifold or carburetor base for leaks or being disconnected. Install or replace as necessary. 2. Check PCV system for proper operation. Replace as required. 3. Torque carburetor to manifold, and manifold bolts to specifications. Using a pressure oil can spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, replace the carburetor or manifold gaskets as necessary.
	4. Fast idle cam.	1. Check fast idle cam for freedom of operation. Clean or replace as required. 2. Check choke hot air tubes for plugging, which would restrict hot air flow to choke housing. Repair as required. 3. Check adjustment of thermostatic coil. Readjust to specification as required.
	5. Malfunctioning TVS switch.	1. Perform TVS switch diagnosis. Replace as required.
	6. Excessively lean condition caused by carburetor idle mixture adjustment.	1. Adjust carburetor idle mixture as specified, in the Tune-Up and Engine Performance section.
Engine hesitates on acceleration.	1. Accelerator pump adjustment.	1. Adjust accelerator pump to specification.
	2. Inoperative accelerator pump system. A quick check of the pump system can be made as follows: With the engine off, look into the carburetor bores and observe pump shooters while briskly opening throttle valves. A full stream of fuel should emit from each pump jet and strike the boost venturi area.	1. Remove air horn and check pump cup and expander spring. If cracked, scored, or distorted, replace the pump plunger. 2. Check the pump inlet and discharge balls for proper seating and location. Pump discharge ball is checked for proper seating by filling cavity above ball with fuel to level of casting. No "leak down" should occur with discharge ball, spring, and retainer in place. Restake or replace check ball if leaking. The pump inlet ball is the small aluminum ball located in the bottom of the pump well.

Condition	Possible Cause	Correction
	3. Dirt in pump passages.	1. Clean and blow out with compressed air.
	4. Float level too low.	1. Check and reset float level to specification.
	5. Loose mechanical power valve.	1. Check tightness of mechanical power valve located in bottom of accelerator pump well. If valve is tight, inspect valve to assure that no fuel leakage occurs by the plunger when valve is closed.
	6. Air cleaner operation.	1. Check operation and regulation of thermac system. Replace or repair as required.
Engine has less than normal power at low speeds.	1. Loose, broken, or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses.
	2. Clogged or inoperative PCV system.	1. Clean or replace as necessary.
	3. Choke sticking.	1. Check complete choke system for sticking or binding. 2. Check hot air tubes for plugging, which would restrict hot air flow to choke housing. Repair as required. 3. Check adjustment of thermostatic coil. Readjust to specification as required.
	4. Air cleaner operation.	1. Check regulation and operation of thermac system. Replace or repair as required.
(NOTE: An engine tuneup should be conducted in conjunction with the carburetor diagnosis.) The EGR system diagnosis should also be performed.		
Engine has less than normal power on heavy acceleration or at high speed.	1. Carburetor throttle valves not going wide open.	1. Correct accelerator linkage as required. Check for proper installation of carpet and jute around accelerator pedal.
	2. Dirty or plugged fuel inlet filter.	1. Replace fuel filter as required.
	3. Power system not operating.	1. Remove the carburetor air horn and check the vacuum power valve in the bottom of the float bowl for the following: Look for dirty, sticking or loose valve. Clean, tighten and/or replace as necessary.

Condition	Possible Cause	Correction
		2. Check the mechanical power valve in the bottom of the accelerator pump well. Look for dirty, sticking, or loose valve. Clean, tighten and/ or replace as necessary. 3. Check the bottom plunger of the accelerator pump for cracks, distortion, etc. which would affect the accelerator pump to power valve contact. Replace or repair as required. 4. Check the power piston spring and power piston in the air horn cavity. Check for bent or sticking power piston or distorted spring. Clean or replace as necessary. 5. Upon reassembly of carburetor, check accelerator pump mechanical adjustment. Adjust to specification.
	4. Fuel level too low.	1. Check and adjust float level to specification.
	5. Float drop adjustment.	1. Check and adjust float drop as specified.
	6. Main metering jets or venturi cluster dirty, plugged, or damaged.	1. If the main metering jets are plugged or dirty and excessive dirt is in the fuel bowl, the carburetor should be completely disassembled and cleaned. 2. If the jets are damaged, consult the parts list for proper size. 3. If pull over enrichment fuel feeds are plugged or dirty, clean the feed holes and passages in the carburetor.
	7. Choke valve not opening.	1. Check choke hot air tube for plugging which would restrict hot air flow to choke housing. 2. Check adjustment of thermostatic coil. Readjust to specification as required.
	8. Excessively dirty or plugged air cleaner.	1. Replace as required.
	9. Air cleaner operation.	1. Check operation of thermac system. Repair or replace as required.
	10. Exhaust restriction.	1. Check for excessive exhaust restrictions. Repair or replace as required.
Engine surges.	1. Loose, broken, or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses. Correct as necessary.

Condition	Possible Cause	Correction
	2. PCV system clogged or malfunctioning.	1. Check PCV system. Clean or replace as necessary.
	3. Loose carburetor, EGR, or intake manifold bolts and/or leaking gaskets.	1. Torque carburetor to manifold, manifold and EGR bolts to specification. Using a pressure oil can, spray light oil or kerosene around manifold legs, EGR and carburetor base. If engine RPM changes, tighten or replace the carburetor, EGR, or manifold gasket as necessary.
	4. Low or erratic fuel pump pressure.	1. Check fuel system and fuel pump diagnosis. Repair or replace as required.
	5. Contaminated fuel.	1. Check for contaminants such as; water, dirt, etc. in fuel. Clean system if necessary.
	6. Fuel filter plugged.	1. Replace as necessary.
	7. Float level adjustment.	1. Check and reset float level to specification.
	8. Damaged float and/or needle and seat.	1. Check operation of system. Repair or replace as required.
	9. Power system not operating.	1. Remove the carburetor air horn and check the vacuum power valve in the bottom of the float bowl for the following: Look for dirty, sticking, or loose valve. Clean, tighten and/or replace as necessary. 2. Check the mechanical power valve in the bottom of the accelerator pump well. Look for dirty, sticking, or loose valve. Clean, tighten and/or replace as necessary. 3. Check the bottom plunger of the accelerator pump for cracks, distortion, etc. which would affect the accelerator pump to power valve contact. Repair or replace as required. 4. Check the power piston spring and power piston in the air horn cavity. Check for bent or sticking power piston or distorted spring. Clean or replace as necessary. 5. Upon reassembly of carburetor, check accelerator pump mechanical adjustment. Adjust as required.
	10. Air cleaner operation.	1. Check operation and regulation of thermac system. Replace or repair as required.

Condition	Possible Cause	Correction
Poor fuel economy and/ or changes in fuel economy.	1. Customer driving habits.	1. Run mileage test with customer driving if possible. Make sure car has 2,000 - 3,000 miles for the "break-in" period.
	2. Loose, broken, or improper routed vacuum hoses.	1. Check condition and routing of all vacuum hoses. Correct as necessary.
	3. Engine tune-up.	1. See tune-up procedure. 2. Check for restricted exhaust system and intake manifold for leakage. 3. Check for carburetor bolt tightness.
	4. Fuel leaks.	1. Check fuel tank, fuel lines, fuel pump, and carburetor for any fuel leakage. Repair or replace as required.
	5. High fuel level in carburetor.	1. Adjust float as specified. 2. Check float for being loaded with fuel, bent float hanger or binds in the float system. Repair or replace as required. 3. Check for dirt in needle and seat. Clean or replace as required.
	6. Power system in carburetor not functioning properly—power piston sticking or power valve leaking or stuck open.	1. Remove the carburetor air horn and check the vacuum power valve in the bottom of the float bowl for the following: Look for dirty, sticking, or loose valve. Clean, tighten and/or replace as necessary. 2. Check the mechanical power valve in the bottom of the accelerator pump well. Look for dirty, sticking, or loose valve. Clean, tighten and/ or replace as necessary. 3. Check the bottom plunger of the accelerator pump for cracks, distortion, etc. which would affect the relationship of accelerator pump to power valve contact point. 4. Check the power piston spring and power piston in the air horn cavity. Check for bent or sticking power piston or distorted spring. Clean or replace as necessary. 5. Upon reassembly of carburetor, check accelerator pump mechanical adjustment. Adjust as required.

Condition	Possible Cause	Correction
	7. Choke not opening.	1. Check hot air tubes for plugging which would restrict hot air flow to choke housing. Repair as required. 2. Check adjustment of thermostatic coil. Readjust to specification as required.
	8. Fuel being pulled from accelerator system into venturi through pump jets.	1. Run engine at RPM where nozzles are feeding fuel. Observe pump jets. If fuel is feeding from jets, check the pump discharge ball, spring, and retainer. Check pump discharge ball for proper seating by filling cavity above ball with fuel to level of casting. No "leak down" should occur with discharge ball, spring, and retainer in place. Restake or replace leaking check ball.

MAINTENANCE AND ADJUSTMENTS

EXTERNAL ADJUSTMENTS:

Pump Rod Adjustment Figure 6E-20A

Back out the idle stop screw and completely close throttle valves in bore. Place pump gauge across top of carburetor air horn ring, with leg of gauge pointing downwards towards top of pump rod. Lower edge of gauge leg should just touch the top of the pump rod, with the gauge set in the specified dimension. Bend the pump rod as required to obtain the specified setting using Tool J-4552.

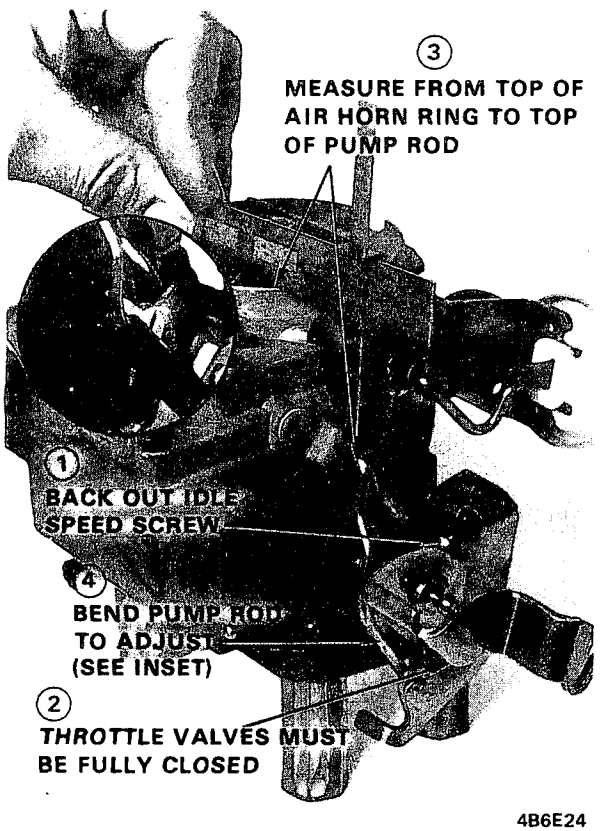

Figure 6E-20A - Pump Rod Adjustment

BOWL VENT VALVE ADJUSTMENT

The pump rod adjustment should be made or checked previous to bowl vent valve adjustment and also the curb idle speed adjusted to specification (See Underhood Tune-Up Label).

1. Adjust idle speed to specifications using the carburetor idle speed screw.

2. Remove two bowl vent valve cover attaching screws in air horn, then remove cover and gasket. Remove bowl vent valve spring. Figure 6E-21.

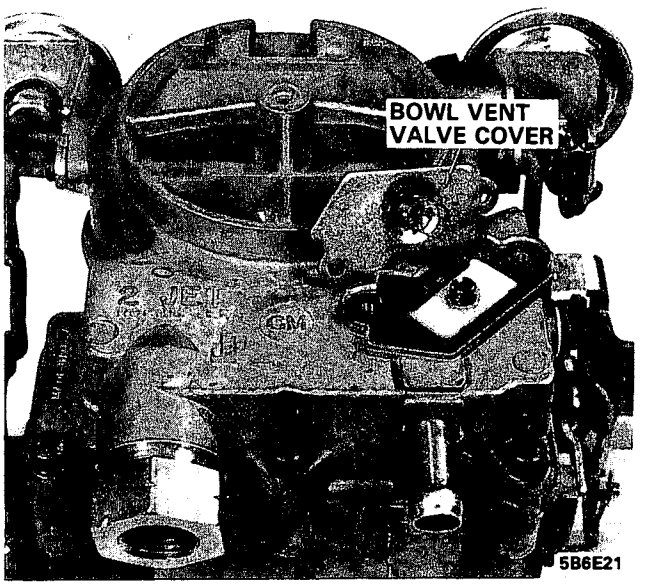

Figure 6E-21 - Bowl Vent Valve Cover

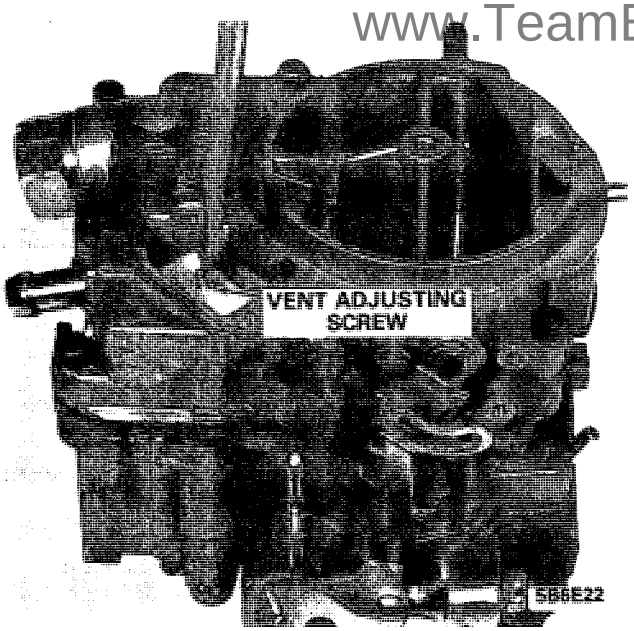

Figure 6E-22 - Adjusting Bowl Vent Valve

3. Place the idle speed screw on the second step of the fast idle cam next to the highest step. In this position, the bowl vent valve should just be closed (seated).

4. If the vent valve is just closed on the second step, rotate the fast idle cam so that the idle speed screw will be on the next lower step. At this point, the vent valve should just begin to open.

5. If necessary to adjust, turn the adjustment screw in the plastic valve until it just closes with the idle speed screw on the second step of the fast idle cam. Figures 6E-22 and 6E-23.

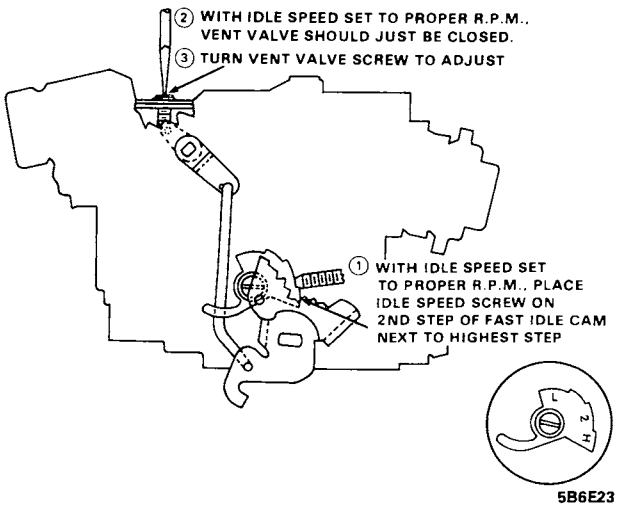

Figure 6E-23 - Bowl Vent Valve Adjusting Procedure

INTERMEDIATE CHOKE ROD ADJUSTMENT (FIGURE 6E-24)

1. Remove the thermostatic cover coil and inside baffle plate assembly by removing three attaching screws and retainers.

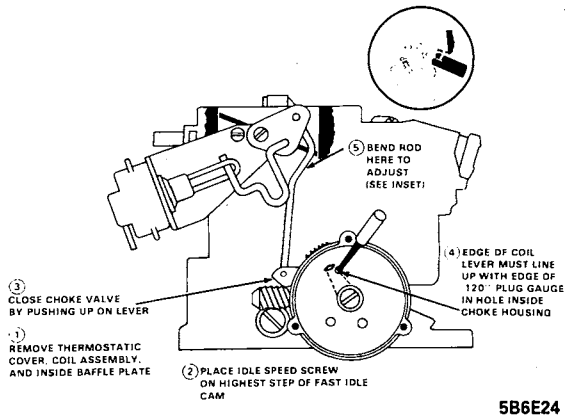

Figure 6E-24 - Intermediate Choke Rod Adjustment

2. Place idle speed screw on the highest step of the fast idle cam.

3. Close choke valve by pushing up on the intermediate choke lever.

4. Edge of coil lever inside choke housing must line up with edge of plug gauge.

5. Bend the choke rod at point shown to adjust.

PRIMARY VACUUM BREAK ADJUSTMENT (FIGURE 6E-25)

Place idle speed screw on the highest step of the fast idle cam.

1. Seat diaphragm plunger using outside vacuum source.

2. Hold the choke valve towards closed choke position.

3. With vacuum diaphragm seated and rod in the end of the slot in the diaphragm plunger, gauge between upper edge of choke valve and air horn wall.

4. Bend vacuum break rod at point shown to adjust.

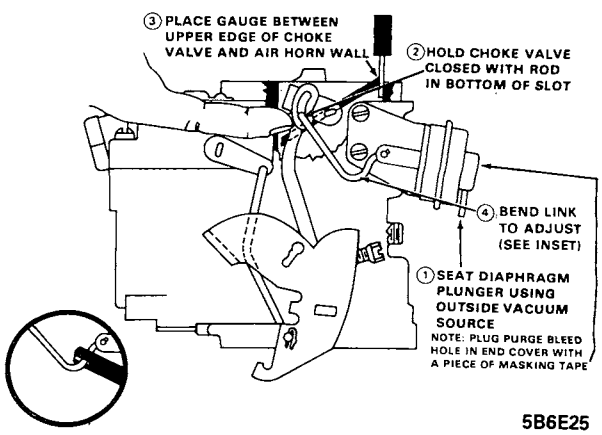

Figure 6E-25 - Primary Vacuum Break Adjustment

AUXILIARY VACUUM BREAK ADJUSTMENT (FIGURE 6D-26)

1. Seat the vacuum break diaphragm using an outside vacuum source. Cover the vacuum break bleed hole as shown using a small piece of tape, so that the diaphragm unit will hold inward and not bleed down.

2. Place idle speed screw on high step of fast idle cam.

3. Hold choke coil lever inside choke housing towards the closed choke position.

4. Rotate inside choke coil lever until the bucking spring in the diaphragm plunger is seated. Then gauge between upper edge of choke valve and air horn wall.

5. Bend the vacuum break rod at point shown to adjust.

6. After adjustment, remove the piece of tape covering the small bleed hole at the rear of the vacuum break diaphragm unit. Reconnect vacuum hose.

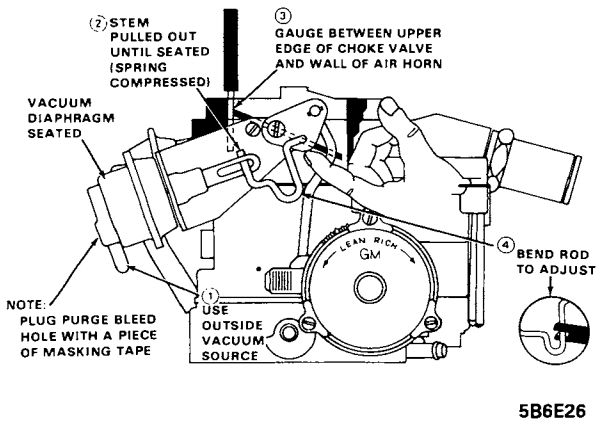

Figure 6E-26 - Auxiliary Vacuum Break Adjustment

FAST IDLE CAM (CHOKE ROD) ADJUSTMENT (FIGURE 6E-27)

Before making this adjustment, make sure to position the idle speed screw as follows:

1. Turn idle speed screw in until it just contacts the low step of the fast idle cam. Then, turn screw in one full turn.

2. After performing step 1, place the idle speed screw on the second stop of the fast idle cam against the highest step.

3. Place gauge between upper edge of choke valve and wall of air horn.

4. If necessary, bend choke lever tang as shown to adjust.

AUTOMATIC CHOKE COIL ADJUSTMENT (FIGURE 6E-28)

1. Place idle speed screw on the highest step of the fast idle cam.

2. Loosen thermostatic choke coil cover retaining screws.

3. Rotate choke cover against coil tension until choke

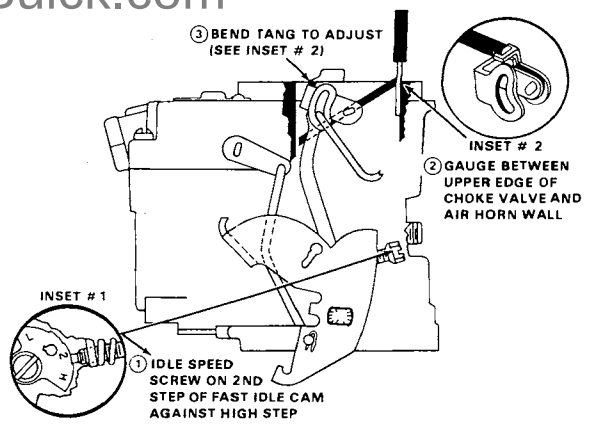

Figure 6E-27 - Fast Idle Cam Adjustment

valve begins to close. Continue rotation until index mark lines up with specified point on choke housing.

4. Tighten choke cover retaining screws.

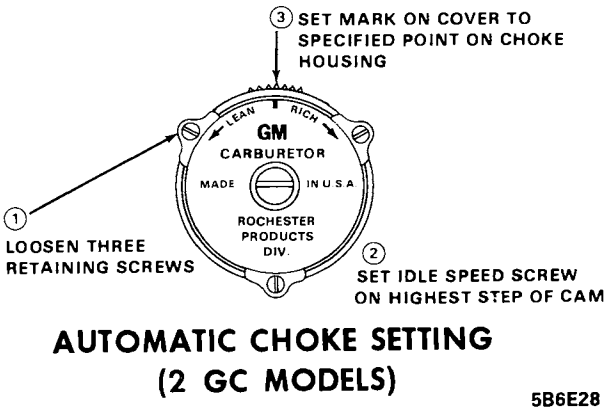

Figure 6E-28 - Automatic Choke Setting

IDLE STOP SOLENOID ADJUSTMENT (FIGURE 6E-29)

1. Disconnect the electrical connection at the solenoid.

2. Set engine RPM, with transmission in "D", to specifications found in "Tune-Up Section".

3. Reconnect electrical connection and open throttle enough to extend solenoid plunger.

4. Set engine RPM, with transmission in "D", to specifications found in "Tune-Up Section".

MAJOR REPAIR

DISASSEMBLY, CLEANING, AND OVERHAUL

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

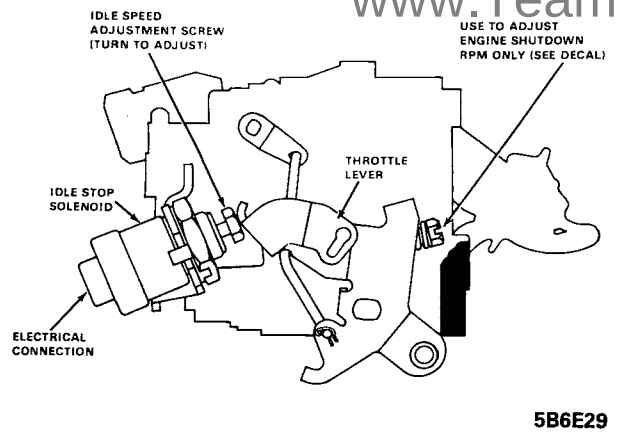

Figure 6E-29 - Idle Stop Solenoid Adjustment

then be examined for dirt or water problems as the carburetor is disassembled.

The following is a step by step sequence by which the Model 2GC carburetor may be completely disassembled and reassembled. Adjustments may be made and various parts of the carburetor may be serviced without completely disassembling the entire unit. Refer to Maintenance and Adjustments for External Carburetor Adjustments.

IDLE STOP SOLENOID ASSEMBLY — 231 V-6

CAUTION: *The electrically operated idle stop solenoid, there used, should be removed from the float bowl for complete carburetor disassembly and should not be immersed in any type of carburetor cleaner.*

To remove the idle stop solenoid assembly, bend back the retaining tabs on lockwasher; then remove large nut which retains the stop solenoid to the carburetor bracket. It is not necessary to remove the bracket from the float bowl assembly unless replacement of the bracket is necessary.

AIR HORN REMOVAL AND DISASSEMBLY

1. Remove fuel inlet filter nut and gasket and remove filter and spring.

2. Disconnect lower end of pump rod from throttle lever by removing spring clip. Figure 6E-30.

3. Remove upper end of pump rod from pump lever by rotating rod out of hole in lever.

4. Remove the primary vacuum break diaphragm hose from tube on throttle body and tube on vacuum break diaphragm unit. Then remove the vacuum break diaphragm assembly from air horn by removing two attaching screws. Figure 6E-31. Remove primary diaphragm and link assembly from lever on end of choke shaft.

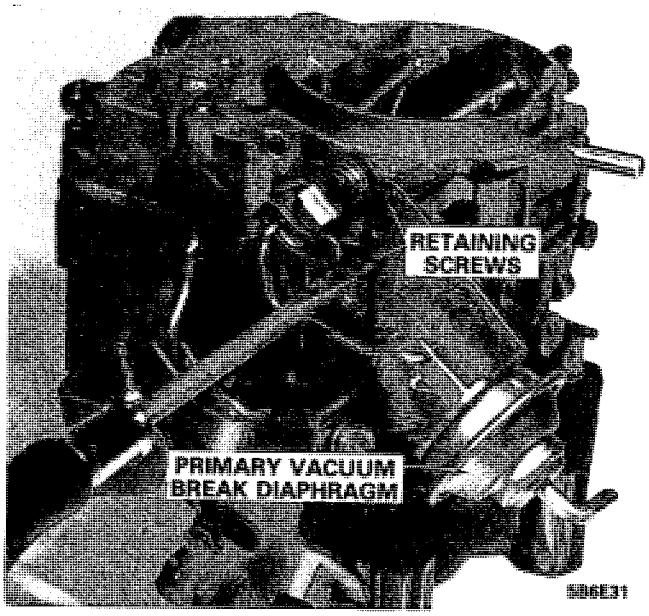

Figure 6E-31 - Removing Primary Vacuum Break Diaphracm

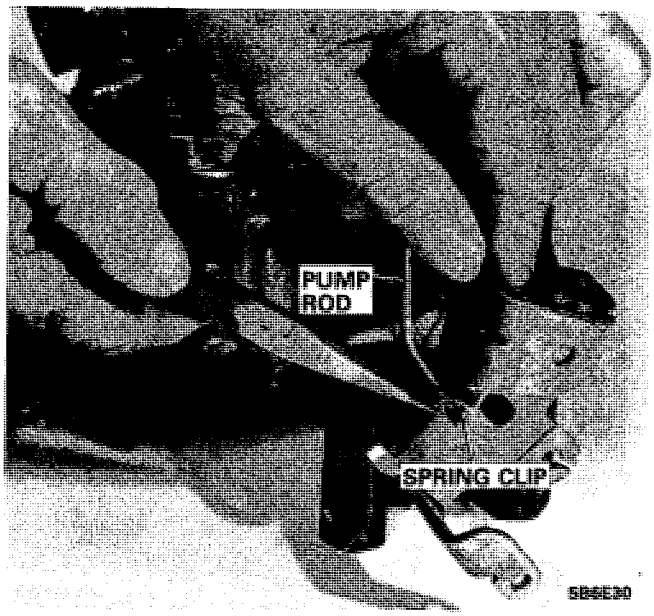

Figure 6E-30 - Removing Pump Rod Spring Clip

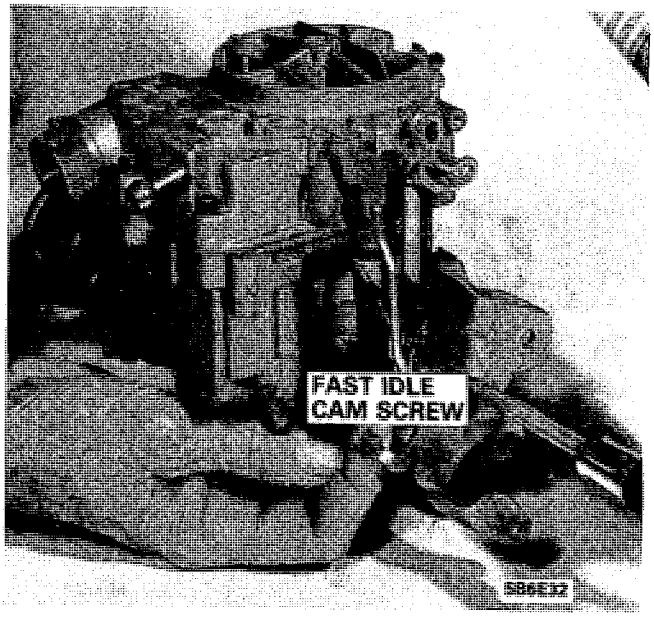

Figure 6E-32 - Removing Fast Idle Cam

5. Remove fast idle cam attaching screw from side of float bowl, Figure 6E-32. Remove fast idle cam from end of choke rod by rotating rod out of hole in fast idle cam. The upper end of the choke rod cannot be removed from the choke shaft until after the air horn has been removed from float bowl.

6. Remove auxiliary vacuum break diaphragm hose from the choke vacuum break and throttle body assembly. Then remove vacuum break lever from end of choke shaft by removing retaining screw in end of shaft. Figure 6E-33. Then, remove the auxiliary vacuum break diaphragm unit by removing the two bracket attaching screws in air horn. Then remove the vacuum break assembly and link from upper choke lever. Remove the thermostatic coil rod from the upper choke lever and from the lever on the thermostatic coil housing.

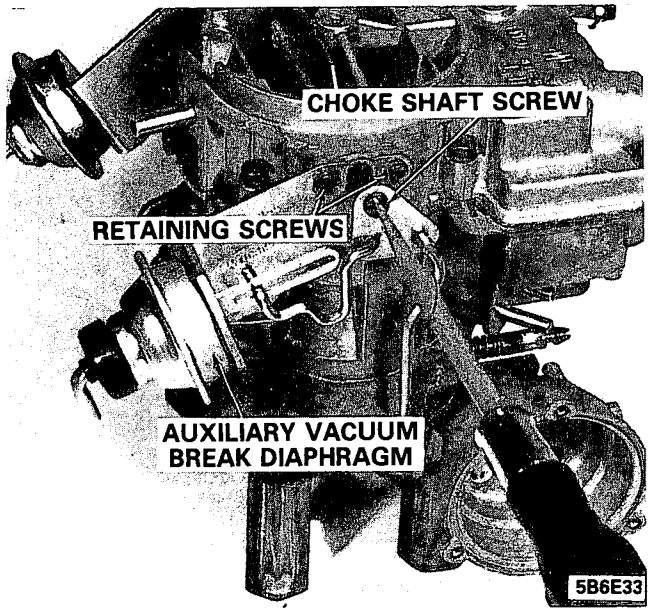

Figure 6E-33 - Removing Auxiliary Vacuum Break Diaphragm

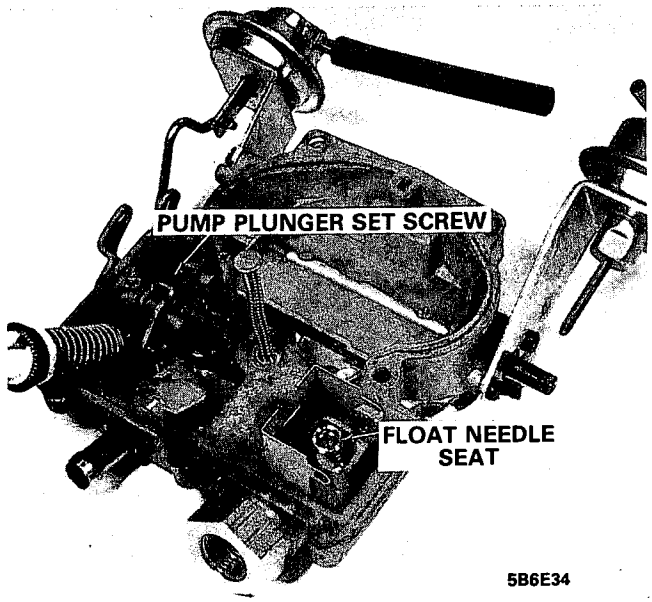

Figure 6E-34 Float Needle Seat Location

7. Remove eight (8) air horn attaching screws, then lift air horn from float bowl.

8. Place air horn on flat surface. Remove float hinge pin and lift float from air horn. Float needle and pull clip (if used) may now be removed from float arm.

9. Remove float needle seat and gasket with a wide blade screw driver. Figure 6E-34.

10. Remove power piston by depressing stem and allowing it to snap free. Use care not to bend the power piston stem.

11. Remove the pump plunger assembly and inner pump lever from pump shaft by loosening set screw on inner lever. To remove the pump plunger stem from the inner pump lever it will be necessary to break off the swedged or flattened end of the pump plunger stem. This should not be done unless pump assembly replacement is necessary, such as during overhaul.

The service pump assembly uses a grooved pump plunger stem and retaining clip. After removing the inner pump lever and pump assembly, remove the outer pump lever and shaft assembly from air horn. Remove the plastic washer on pump plunger shaft.

12. Remove air horn gasket from air horn.

13. Remove two choke valve attaching screws, then remove choke valve. Care should be taken when removing attaching screws so that the choke shaft will not be bent. It may be necessary to file off staked ends on choke valve screws before removing.

14. Remove choke valve shaft from air horn.

15. Remove the fast idle cam rod and lever from the choke shaft.

FLOAT BOWL DISASSEMBLY

1. Remove pump plunger return spring from inside pump well. Then remove aluminum check ball from bottom of pump well by inverting bowl.

2. Remove the power valve and gasket from bottom of pump well. Figure 6E-35.

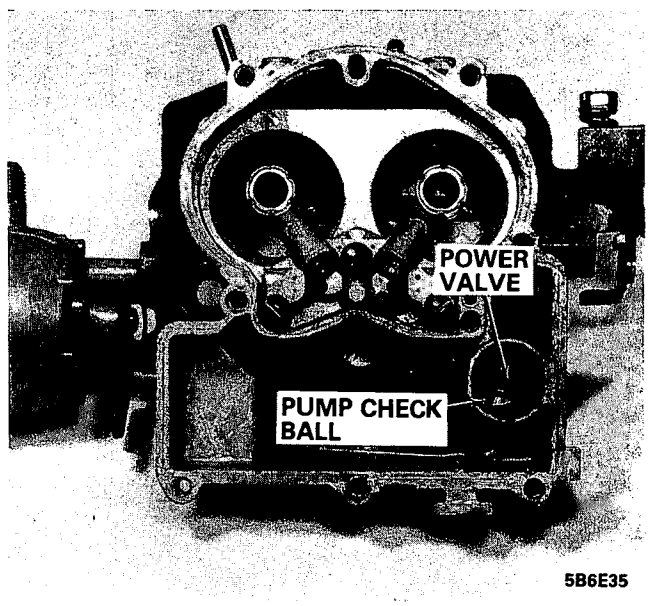

Figure 6E-35 - Power Valve Location

3. Remove main metering jets, power valve and gasket from inside float bowl. Figure 6E-36.

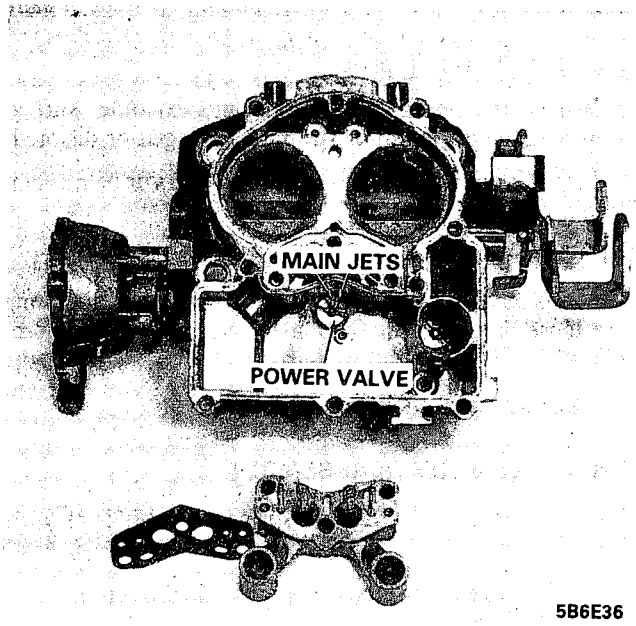

Figure 6E-36 - Power Valve and Main Jets

4. Remove three (3) screws holding venturi cluster to float bowl and remove cluster and gasket. Then remove the plastic main well inserts in the main well cavity.

5. Using a pair of long nosed pliers, remove pump discharge spring retainer. Figure 6E-37. Then, spring and check ball may also be removed from discharge passage.

6. Invert carburetor and remove three (3) large throttle body to bowl attaching screws and lockwashers. Figure 6E-38. Throttle body and gasket may now be removed.

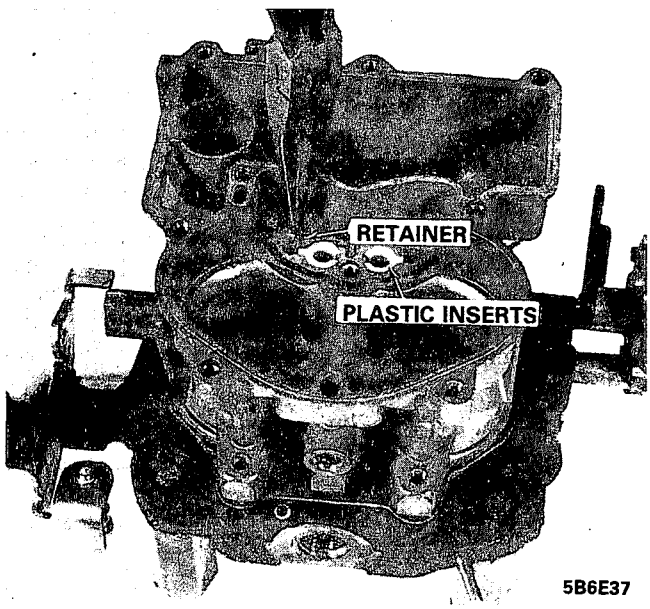

Figure 6E-37 - Discharge Spring Retainer

THROTTLE BODY DISASSEMBLY

1. Remove the three (3) choke cover attaching screws and retainers, then remove thermostatic coil and cover assembly and gasket from choke housing.

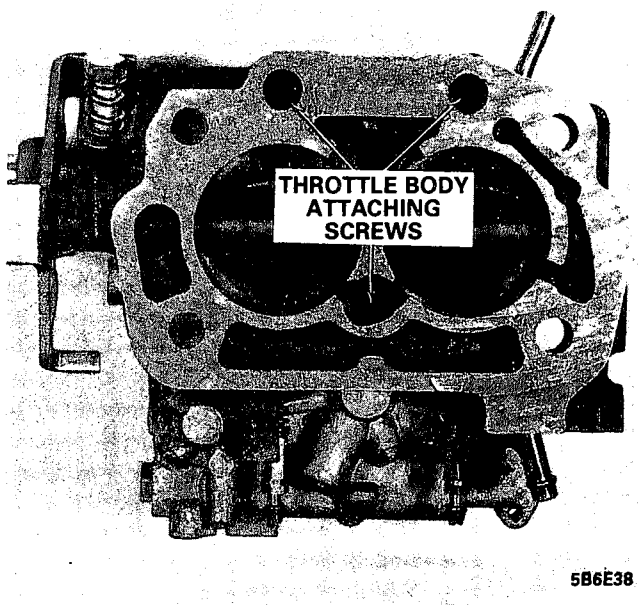

Figure 6E-38 - Throttle Body Attaching Screws

CAUTION: *Do not remove cup baffle from beneath thermostatic coil cover because coil distortion may result.*

2. Remove the two (2) choke housing attaching screws from inside choke housing, then remove choke housing and gasket from throttle body casting. Figure 6E-39.

3. Remove screw from end of intermediate choke shaft in choke housing and then remove the inner choke coil lever from end of choke shaft. Remove outer choke coil lever and shaft assembly from choke housing. Remove rubber dust seal from inside choke housing.

CAUTION: *No attempt should be made to remove the throttle valves or shaft as it may be impossible to reassemble the throttle valves correctly in relation to the idle discharge orifices.*

4. The idle mixture needles have been adjusted and set at the factory and capped, to prevent excessive adjustment in the field. However, the 1975 models have limited idle mixture adjustment. If it is necessary to remove the idle mixture needles for cleaning purposes or if they are damaged, the following procedure should be used.

Using a pair of side cutter pliers, clip off the limit tang on the limiter cap. Then unscrew the idle mixture screw and spring from throttle body. If new idle mixture needles are installed, no plastic limiter caps are required. If the original idle mixture needles had to be removed, install the idle mixture needle and springs into throttle body as described under Reassembly.

(NOTE: No further disassembly of the throttle body is necessary. The throttle valves should not be removed from the throttle shaft as they are aligned at the factory.)

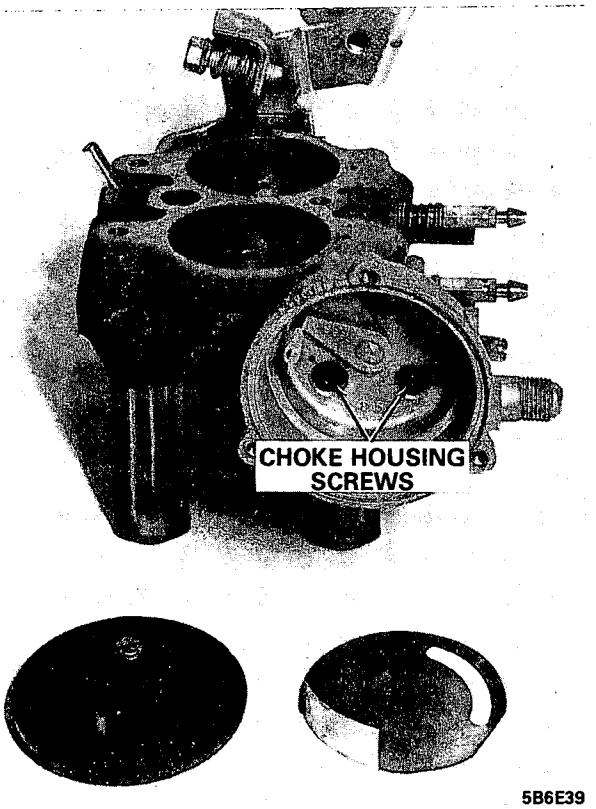

Figure 6E-39 - Removing Choke Housing

CLEANING AND INSPECTION

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

1. Thoroughly clean carburetor casting and metal parts in an approved carburetor cleaning solution.

> **CAUTION:** *Any rubber parts, plastic parts, diaphragm assemblies, pump plungers, should not be immersed in carburetor cleaner.*

2. Blow out all passages in castings dry with compressed air and blow off all parts until they are dry.

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

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

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

b. Check float lip for wear and float for damage. Repair or replace as necessary.

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

d. Inspect idle adjusting needles (if removed) for burrs or ridges, or being bent. Such a condition requires replacement.

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

f. Inspect the pump plunger cup and expander spring. Replace plunger if cup or spring is damaged or distored.

g. Inspect power piston and spring for burrs or being bent. Replace as necessary.

4. Check filters for dirt or lint. Replace as necessary.

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

6. Use new gaskets in reassembly.

THROTTLE BODY REASSEMBLY

1. Install idle stop screw and spring assembly in throttle body if removed.

2. If it was necessary to remove the idle mixture needles, install the idle mixture needles and springs into the throttle body until finger tight and seated. Back out screws 2-1/2 turns as a preliminary idle mixture adjustment.

3. Install new rubber dust seal into cavity inside choke housing. Lip on seal faces towards carburetor after the housing is installed.

4. Install choke coil lever and shaft assembly into choke housing from float bowl side.

5. With the choke lever and shaft assembly installed into housing, install the inside coil lever on flats of intermediate choke shaft and retain with screw. Tighten securely.

6. Install new choke housing to carburetor gasket.

7. Position choke housing on throttle body and retain with two attaching screws. Tighten securely.

8. Before installing the choke cover coil and baffle plate assembly, the intermediate choke rod should be adjusted so that with the choke valve closed, the lever inside the choke housing lines up with gauge as shown in adjustment Figure 6E-24 (intermediate choke rod adjustment).

9. Install choke thermostatic coil and cover assembly with new gaskets and end of coil below plastic tang on the inner choke housing lever. Refer to Specification Chart and Figure 6E-28 for choke coil setting. Install three choke thermostatic coil retainers and screws. Tighten securely.

10. Place a new gasket on the bottom of the float bowl with holes in gasket aligned with holes in casting, then position the throttle body on gasket and install the three attaching screws. Tighten screws evenly and securely.

FLOAT BOWL REASSEMBLY

1. Install mechanical power valve and gasket into bottom of pump well. Use slotted screwdriver. Tighten securely. The mechanical power valve in the pump well can be identified from the vacuum power valve used in the float bowl as follows:

The pump well power valve is longer, has four feed holes

located in the side of the valve, plus a much stronger valve spring than the vacuum operated power valve.

CAUTION: *The two power valves should not be mixed during assembly as serious performance problems could result.*

2. Drop small aluminum inlet check ball into hole in pump well. Install pump return spring, pressing with finger to center in pump well.

3. Drop steel pump discharge ball into pump discharge hole located beneath the venturi cluster. Ball is 3/16" diameter (do not confuse with aluminum inlet ball). Install pump discharge ball spring and retainer.

4. Install plastic main well inserts into the main fuel wells located beneath the venturi cluster and make sure they are seated in recesses provided. Then install venturi cluster and gasket, tighten three screws evenly and securely. Make certain center screw is fitted with a gasket to prevent pump discharge leakage.

5. Install two main metering jets and vacuum operated power valve into bottom of float bowl.

AIR HORN REASSEMBLY

1. Install the upper choke rod lever onto choke shaft. Then install the choke shaft assembly into the air horn from the throttle lever side. Then install the choke valve onto the choke shaft with the letters RP or the part number facing upward.

Install the choke valve attaching screws. Center the choke valve before tightening choke valve screws. Tighten choke valve screws and stake lightly in place.

2. If removed, install the outer pump shaft and lever assembly into air horn casting. If a plastic washer is used between the outer pump lever and air horn, make sure the plastic washer is in place before installing the outer pump shaft and lever assembly.

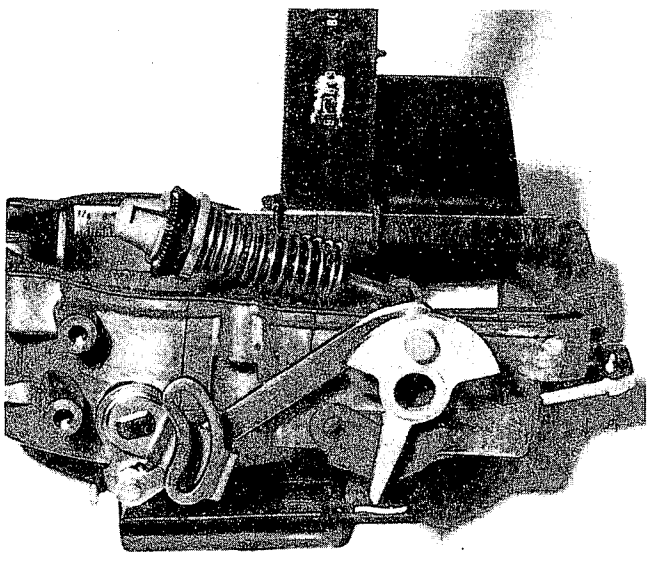

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Figure 6E-40 - Float Level

3. Install the pump plunger to the inner lever and retain with clip provided in the repair kit. End of pump plunger

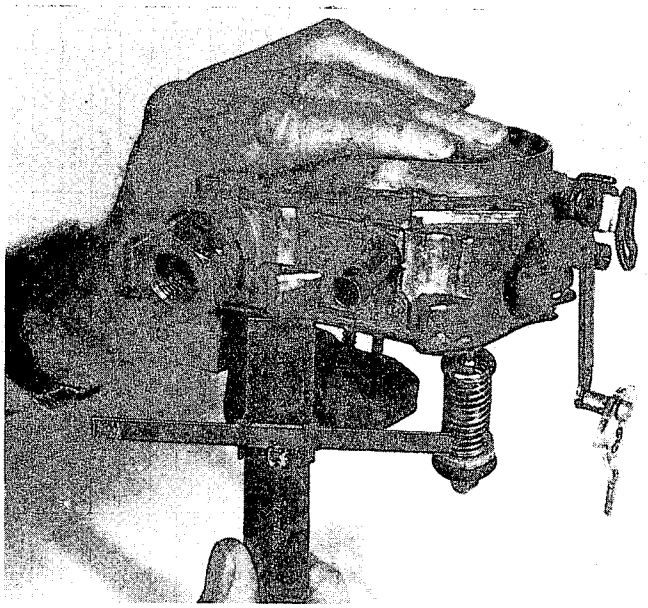


Figure 6E-41 - Float Drop

shaft should point inward towards center of carburetor when installed correctly. Then install inner pump lever onto the pump shaft and tighten set screws securely.

4. Position the float needle seat gasket on the needle seat and install seat in the air horn using a side blade screw driver. Tighten securely.

5. Install the power piston assembly into the air horn casting and lightly stake the retaining washer to casting. Make sure the piston travels up and down freely and is not bent.

6. Install air horn gasket onto air horn casting.

7. Install float needle pull clip, if used, onto the float needle and on hanger assembly. Then install float assembly on air horn and insert hinge pin.

8. Check float level and drop adjustments. See Specifications Chart and Figures 6E-40 and 6E-41.

ASSEMBLY OF AIR HORN TO FLOAT BOWL

1. Place the air horn assembly on bowl, making certain that the accelerator pump plunger is correctly positioned into pump well and will move freely.

2. Install and tighten eight air horn attaching screws evenly and securely.

3. Install filter pressure relief spring into air horn casting, then install fuel inlet filter and fuel inlet nut. Tighten up to 25 ft. lbs.

4. Install fast idle cam to lower end of choke rod (part number or identification faces outward on fast idle cam assembly). Then install the fast idle cam to float bowl retaining with the fast idle cam attaching screw. Tighten securely. Move linkage up and down to make sure it will fall freely.

5. Install pump rod into upper pump lever by rotating offset end into hole in lever and install lower end of pump rod to throttle lever and retain with a spring clip.

1975 2GC SERVICE SPECIFICATIONS

	231 ENGINE	231 ENGINE	231 ENGINE	231 ENGINE	231 ENGINE	231 ENGINE	350 ENGINE	350 ENGINE
	H-SERIES MAN. TRANS. ALL	A & X SERIES MAN. TRANS. ALL	A AND X-SERIES AUTO. TRANS. FED.	H-SERIES AUTO. TRANS. FED.	A AND X-SERIES AUTO. TRANS. CALIF.	H-SERIES AUTO. TRANS. CALIF.	X-SERIES ALL	A-B SERIES ALL
MODEL DESIGNATION	2GC	2GC	2GC	2GC	2GC	2GC	2GC	2GC
NUMBER OF BARRELS	2	2	2	2	2	2	2	2
PART NUMBER	7045147	7045145	7045148	7045149	7045448	7045449	7045143	7045140
THROTTLE BORE	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16	1 11/16
SMALL VENTURI	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8
LARGE VENTURI	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
HIGH ALTITUDE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
IDLE TUBE RESTRICTION	2– #69	2– #69	2– #69	2– #69	2– #69	2– #69	#67	#67
IDLE NEEDLE HOLE	#53	#53	#53	#53	#53	#53	#55	#55
SPARK HOLE	.045 x .125	.045 x .125	.045 x .125	.045 x .125	.045 x .125	.045 x .125	.045 x .125	.045 x .125
PUMP DISCHARGE HOLES	2– #67	2– #67	2– #67	2– #67	2– #67	2– #67	2– #64	2– #64
CHOKE COIL NO.	#85	#85	#85	#85	#85	#85	#85	#85
FIRST IDLE CAM NO.	17051250	17051250	17051489	17051489	17051489	17051489	17052310	17052310
DOME VENT	2– #67	2– #67	2– #67	2– #67	2– #67	2– #67	2– #67	2– #67
CLUSTER TOP BLEED	2– #58	2– #58	2– #58	2– #58	2– #58	2– #58	2– #58	2– #58
FLOAT LEVEL ADJUSTMENT	13/32	13/32	13/32	13/32	13/32	13/32	15/32	15/32
FLOAT DROP ADJUSTMENT	1-9/32	1-9/32	1-9/32	1-9/32	1-9/32	1-9/32	1-9/32	1-9/32
PUMP ROD ADJUSTMENT	1-3/4	1-3/4	1-3/4	1-3/4	1-3/4	1-3/4	1-3/4	1-3/4
CHOKE TANG ADJUSTMENT	.080"	.080"	.080"	.080"	.080"	.080"	.080"	.080"
CHOKE UNLOADER ADJUSTMENT	.140"	.140"	.140"	.140"	.140"	.140"	.180"	.180"
IDLE SPEED (ON CAR)							600	
SOLENOID ENERGIZED	800 N.	800 N.	700 D.	650	700 D	700 D.		
SOLENOID DE-ENERGIZED	600 N.	600 N.	500 D.	500	500 D.	500 D.		
VACUUM BRAKE ADJUSTMENT PRIMARY	.120"	.120"	.120"	.120"	.120"	.120"	.140"	.140"
VACUUM BRAKE ADJUSTMENT SECONDARY	.120"	.120"	.120"	.120"	.120"	.120"	.120"	.120"
CHOKE COVER SETTING	1 NOTCH LEAN	INDEX	1 NOTCH RICH	1 NOTCH RICH	INDEX	1 NOTCH LEAN	1 NOTCH RICH	1 NOTCH RICH

5B6E42

Figure 6E-42 - Specifications

6. Install primary vacuum break diaphragm link into lever on choke shaft and other end of link to vacuum break diaphragm stem. Then install the vacuum break diaphragm assembly onto air horn with two attaching screws. Tighten securely.

7. Install auxiliary vacuum break diaphragm assembly onto air horn with two attaching screws. Tighten securely.

8. Install lower end of intermediate choke rod into intermediate choke lever on choke housing and connect upper end of rod to upper choke lever. Install vacuum break diaphragm link into stem of vacuum break diaphragm and upper choke lever.

9. Install the upper choke lever onto end of choke shaft making sure that the lever fits over flats on shaft. Install attaching screw and tighten securely.

10. Connect both vacuum break hoses to each diaphragm unit and vacuum tube on throttle body.

11. Install plastic idle vent valve (where used) in top of air horn. Install a small pressure spring above vent valve. Then install the vent valve cover and gasket retaining with two attaching screws. Tighten securely.

(NOTE: After complete carburetor assembly, check and re-set (if necessary) all choke adjustments and pump rod adjustments as outlined under Maintenance and Adjustments.

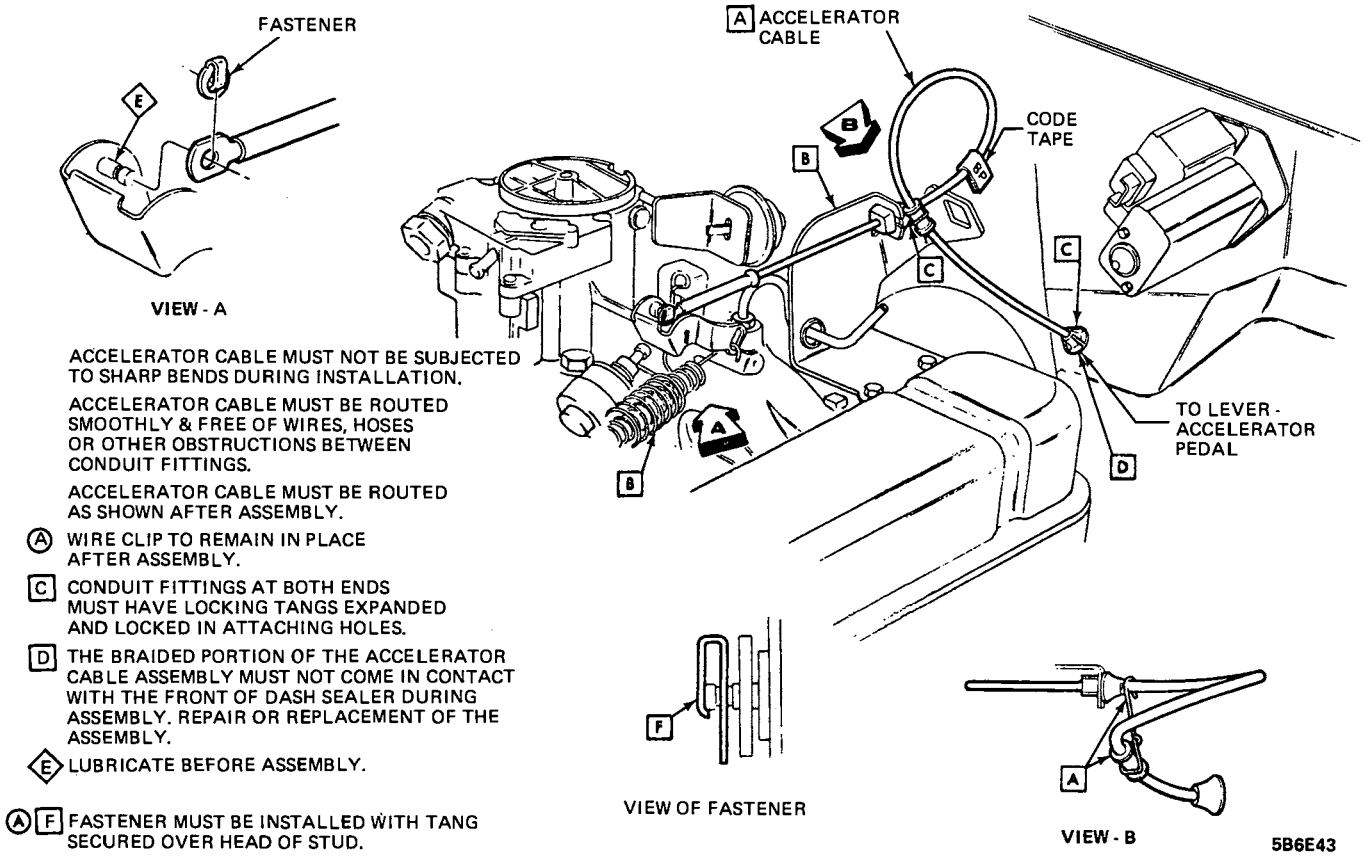


Figure 6E-43 - Accelerator Controls "H" 231

(2) ACCELERATOR CABLE MUST NOT BE SUBJECTED TO SHARP BENDS DURING INSTALLATION.

(3) ACCELERATOR CABLE MUST BE ROUTED SMOOTHLY AND FREE OF WIRES, HOSES, OR OTHER OBSTRUCTIONS BETWEEN CONDUIT FITTINGS.

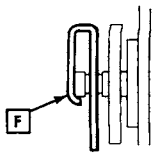
◇D LUBRICATE BEFORE ASSEMBLY.

Ⓐ[E] THE BRAIDED PORTION OF THE ACCELERATOR CABLE ASSEMBLY MUST NOT COME IN CONTACT WITH THE FRONT OF DASH SEALER DURING ASSEMBLY, REPAIR OR REPLACEMENT OF THE ASSEMBLY.

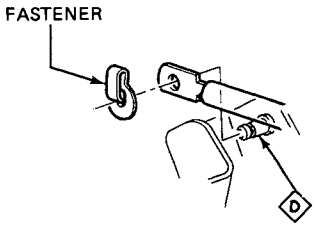
[F] FASTENER MUST BE INSTALLED WITH TANG SECURED OVER HEAD OF STUD.

[G] CONDUIT FITTING MUST HAVE LOCKING TANGS EXPANDED AND LOCKED IN ATTACHING HOLE.

Ⓐ[H] APPLY SEALER TO GASKET TOWARD DASH.



Ⓐ VIEW OF FASTENER



VIEW - A

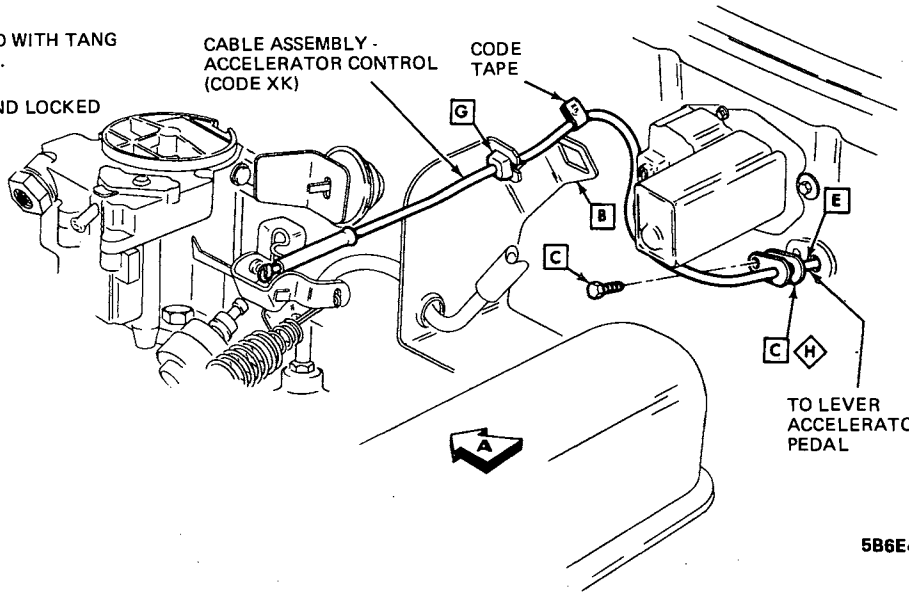


Figure 6E-44 - Accelerator Controls "X" 231

[G] THE BRAIDED PORTION OF THE ACCELERATOR CABLE ASSEMBLY MUST NOT COME IN CONTACT WITH THE FRONT OF DASH SEALER DURING ASSEMBLY, REPAIR OR REPLACEMENT OF THE ASSEMBLY.

[A] (2) ACCELERATOR CABLE MUST NOT BE SUBJECTED TO SHARP BENDS DURING INSTALLATION.

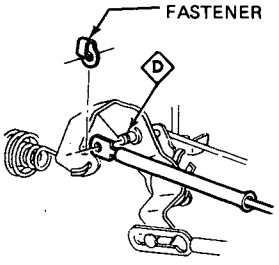
(3) ACCELERATOR CABLE MUST BE ROUTED SMOOTHLY AND FREE OF WIRES, HOSES OR OTHER OBSTRUCTIONS BETWEEN CONDUIT FITTINGS.

◇C APPLY SEALER TO GASKET TOWARD DASH.

◇D LUBRICATE BEFORE ASSEMBLY.

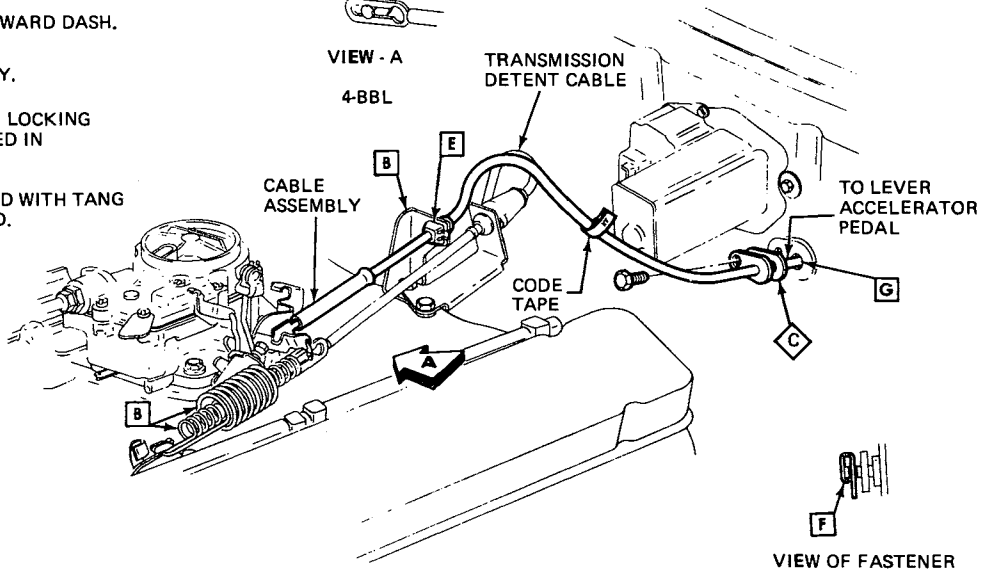
[E] CONDUIT FITTING MUST HAVE LOCKING TANGS EXPANDED AND LOCKED IN ATTACHING HOLE.

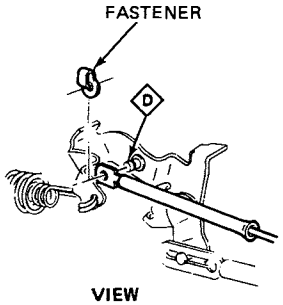
[F] FASTENER MUST BE INSTALLED WITH TANG SECURED OVER HEAD OF STUD.



VIEW - A

4-BBL





VIEW

2-BBL

VIEW OF FASTENER

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Figure 6E-44A - Accelerator Controls "X" 350

[A] (2) ACCELERATOR CABLE MUST NOT BE SUBJECTED TO SHARP BENDS DURING INSTALLATION.

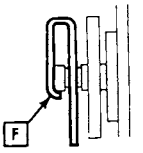
(3) ACCELERATOR CABLE MUST BE ROUTED SMOOTHLY AND FREE OF WIRES, HOSES OR OTHER OBSTRUCTIONS BETWEEN CONDUIT FITTINGS.

[C] CONDUIT FITTING AT BOTH ENDS MUST HAVE LOCKING TANGS EXPANDED AND LOCKED IN ATTACHING HOLES.

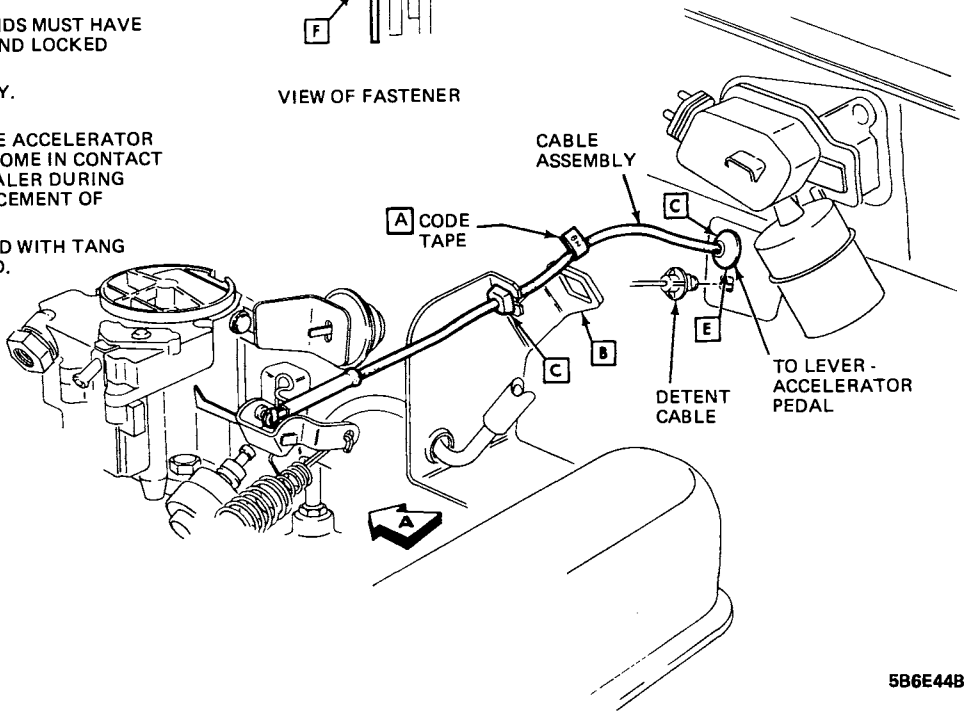
◇D LUBRICATE BEFORE ASSEMBLY.

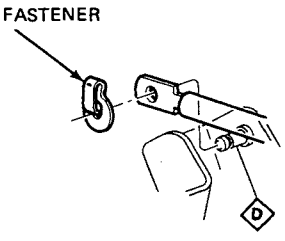
[E] THE BRAIDED PORTION OF THE ACCELERATOR CABLE ASSEMBLY MUST NOT COME IN CONTACT WITH THE FRONT OF DASH SEALER DURING ASSEMBLY, REPAIR OR REPLACEMENT OF THE ASSEMBLY.

[F] FASTENER MUST BE INSTALLED WITH TANG SECURED OVER HEAD OF STUD.



VIEW OF FASTENER





VIEW - A

5B6E44B

Figure 6E-44B - Accelerator Controls "A" 231

Ⓑ [A] (2) ACCELERATOR CABLE MUST NOT BE SUBJECTED TO SHARP BENDS DURING INSTALLATION.

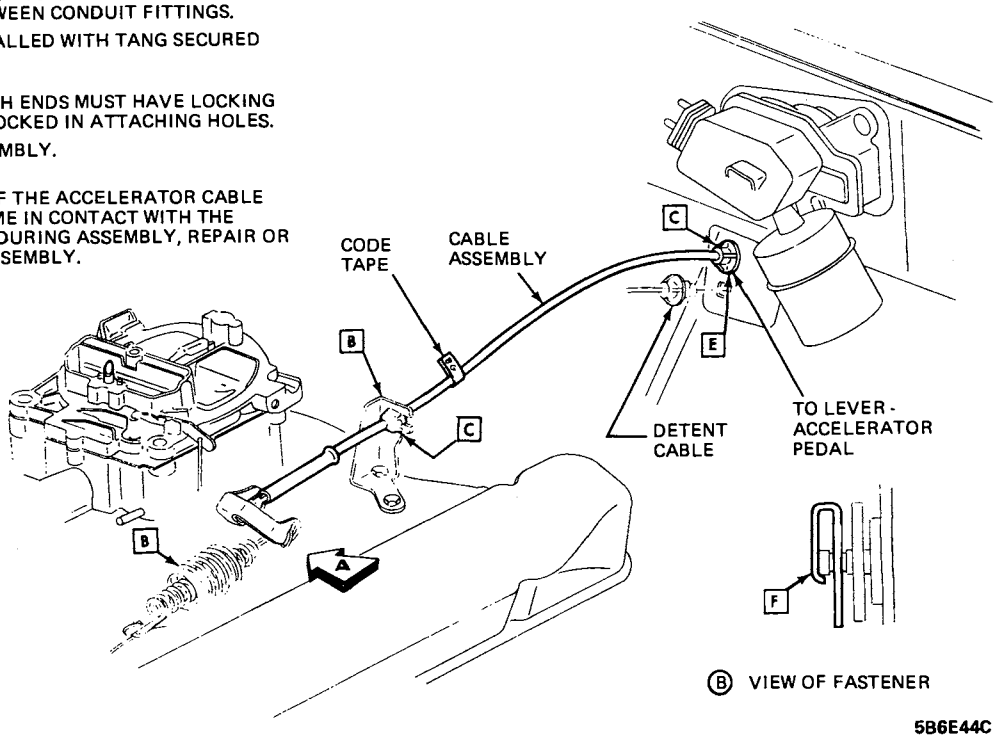
(3) ACCELERATOR CABLE MUST BE ROUTED SMOOTHLY AND FREE OF WIRES, HOSES OR OTHER OBSTRUCTIONS BETWEEN CONDUIT FITTINGS.

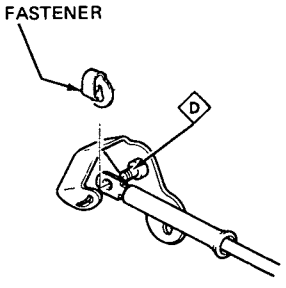
Ⓑ [F] FASTENER MUST BE INSTALLED WITH TANG SECURED OVER HEAD OF STUD.

[C] CONDUIT FITTING AT BOTH ENDS MUST HAVE LOCKING TANGS EXPANDED AND LOCKED IN ATTACHING HOLES.

◇D LUBRICATE BEFORE ASSEMBLY.

Ⓑ [E] THE BRAIDED PORTION OF THE ACCELERATOR CABLE ASSEMBLY MUST NOT COME IN CONTACT WITH THE FRONT OF DASH SEALER DURING ASSEMBLY, REPAIR OR REPLACEMENT OF THE ASSEMBLY.





VIEW - A

Ⓑ VIEW OF FASTENER

5B6E44C

Figure 6E-44C - Accelerator Controls "A-B" 350 2 Bbl. and 4Bbl.

ROCHESTER 2MC CARBURETOR

CONTENTS

DESCRIPTION AND OPERATION

GENERAL DESCRIPTION

The Rochester Model 2MC carburetor (Dualjet) is a 2-barrel, single stage carburetor of downdraft design. The 2MC includes the proven design features of the primary side of the standard 4-barrel Quadrajet carburetor.

A triple venturi, similar to that used on the primary side of the Quadrajet, with small 1-3/8" bores, makes the 2MC model especially adaptable to smaller engine sizes. The triple venturi stack-up, plus smaller bores, results in good fuel control during idle and part throttle operation.

During off-idle and part throttle operation, fuel metering is accomplished by two tapered metering rods, operating in fixed jets, positioned by a manifold vacuum responsive position. During greater throttle openings when additional fuel is needed for power, the two (2) tapered metering rods are positioned by manifold vacuum acting on the power piston. In this way, the power piston controls fuel metering during light and heavy power requirements.

The 2MC model has no secondary throttle valves, thus there is no secondary system of operation.

FLOAT SYSTEM OPERATION (FIGURE 6E-45)

Fuel from the engine fuel pump enters the carburetor fuel inlet passage. It passes through the pleated paper filter element, fuel inlet valve, and on into the float bowl chamber. As the incoming fuel fills the float bowl to the prescribed level, the float pontoon rises and forces the fuel inlet valve closed, shutting off fuel flow. As fuel is used from the float bowl, the float drops allowing the float valve to open, when more fuel again fills the bowl. This cycle continues, maintianing a constant fuel level in the float bowl.

The float pontoon is solid and is made of a light weight closed cell plastic material. This feature gives added buoyancy to allow the use of a single float to maintain constant fuel levels. A float pull clip, fastened to the float needle, hooks over the edge of the float arm at the center as shown. Its purpose is to assist in lifting the float valve off its seat whenever fuel level in the float bowl is low.

CAUTION: *Do not place pull clip through small holes in top of float arm. Severe flooding will result.*

The carburetor float chamber is internally vented through a vent tube located in the air horn. The internal vent tube leads from beneath the air cleaner to the float chamber. The purpose of the vent tube is to balance air pressure acting on the fuel in the bowl with air flow through the carburetor bores. In this way, balanced air/fuel mixture ratios can be maintained throughout all carburetor ranges of operation.

IDLE SYSTEM OPERATION (FIGURE 6E-46)

Each bore of the 2MC carburetor has a separate and independent idle system to supply the correct air/fuel mixture ratios during idle and off-idle operation. The idle system is used during this period because air flow through the carburetor venturi is not great enough to obtain efficient metering from the main discharge nozzles.

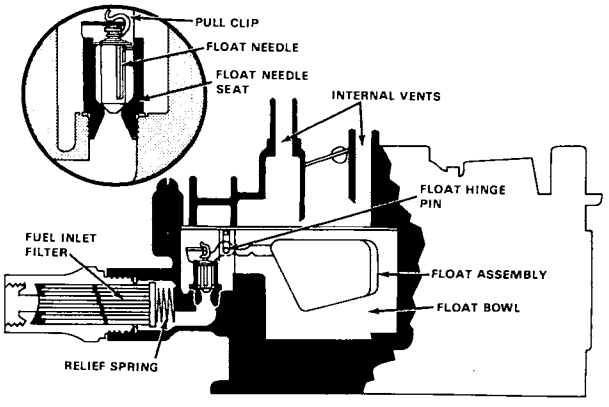


Figure 6E-45 - Float System

The idle system operates as follows:

During curb idle, the throttle valves are held slightly open

by the idle speed screw. The small amount of air passing between the throttle valve and bores is regulated by this screw to give the engine the desired idle speed. Since the engine requires very little air for idle and low speeds, fuel is added to the air to produce a combustible mixture by the direct application of vacuum (low pressure) from the engine manifold to the idle discharge holes below the throttle valves. With the idle discharge holes in a very low pressure area and the fuel in the float bowl vented to atmosphere (high pressure), the idle system operates as follows:

Fuel flows from the float bowl down through the main metering jets into the main fuel wells. It is picked up in the main wells by the two idle tubes (one for each bore) which extend into the wells. The fuel is metered at the lower tip of the idle tube and passes up through the tube. The fuel is mixed with air at the top of each idle tube through an idle air bleed.

Then the fuel mixture crosses over to the idle down channels where it is mixed with air at the side idle bleed located just above the idle channel restriction. The mixture continues down through the calibrated idle channel restrictions past the lower idle air bleeds and off idle discharge ports where it is further mixed with air. The air/fuel mixture moves down to the idle mixture needle discharge holes where it enters the carburetor bores and blends with the air passing the slightly open throttle valves. The combustible air/fuel mixture then passes through the intake manifold to the engine cylinders.

The idle mixture needles are pre-adjusted to blend the correct amount of fuel mixture from the idle system with the air entering the engine at idle. Turning the idle mixture needles inward (clockwise) decreases the idle fuel discharge and turning the mixture needles outward (counterclockwise) enriches the engine idle mixture. Idle mixture needles are pre-adjusted, and then limiter caps are installed to discourage idle mixture needle re-adjustment.

As the primary throttle valves are opened from curb idle to increase engine speed, additional fuel is needed to combine with the extra air entering the engine. This is accomplished by the slotted off-idle discharge ports. As the primary throttle valves open, they pass by the off-idle ports, gradually exposing them to high engine vacuum below the throttle valve. The additional fuel added from the off idle ports mixes with the increasing air flow past the opening throttle valves to meet increased engine air and fuel demands.

Further opening of the throttle valves increases the air velocity through the carburetor venturi sufficiently to cause low pressure at the lower idle air bleeds. As a result, fuel begins to discharge from the lower idle air bleed holes and continues to do so throughout operation of the part throttle to wide open throttle ranges, supplementing the main discharge nozzle delivery.

EXHAUST GAS RECIRCULATION SYSTEM (E.G.R.)

An Exhaust Gas Recirculation (E.G.R.) system is used on all models to control oxides of nitrogen (NOx) emissions. The E.G.R. valve is operated by a vacuum signal taken from the carburetor. Two punched ports, one located just above the throttle valve and the other near the upper edge of the throttle body casting, provide a timed vacuum signal port for E.G.R. valve operation in the off-idle and part throttle ranges of the carburetor.

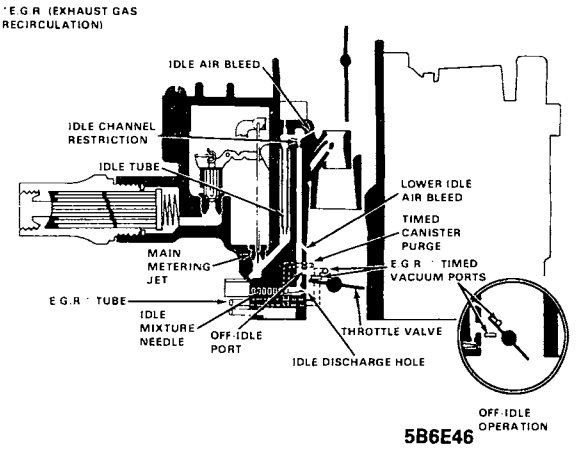


Figure 6E-46 - Idle System

The port system operates as follows:

As the throttle valve is opened beyond the idle position the first vacuum port for the E.G.R. system is exposed to manifold vacuum to supply a vacuum signal to the E.G.R. valve. To control the vacuum signal at the lower port, the upper port bleeds air into the vacuum channel and modulates the amount of vacuum signal supplied by the lower E.G.R. port. In this manner, the E.G.R. valve can be timed for precise metering of exhaust gases to the intake manifold, dependent upon location of the ports in the carburetor bore and degree of throttle valve opening.

As the throttle valves are opened further in the part throttle range, the upper port ceases to function as an air bleed and is gradually exposed to manifold vacuum to supplement the vacuum signal at the lower port and maintain correct E.G.R. valve position.

The upper and lower vacuum ports connect to a cavity in the throttle body which, in turn, through a passage supply the vacuum signal to an E.G.R. tube pressed into the front corner of the throttle body casting. The tube in the throttle body is connected by a hose to the E.G.R. valve located on the intake manifold.

The E.G.R. valve remains closed during periods of engine idle and deceleration to prevent rough idle which could be caused from excessive exhaust gas contamination in the idle air/fuel mixtures.

On applications using the back pressure type E.G.R. valve, the valve is controlled by vacuum from the timed spark port. The amount of vacuum to the back pressure type E.G.R. valve is controlled through a vacuum transducer valve. The standard E.G.R. system will have the tube on the throttle body capped.

TIMED CANISTER PURGE

In that the fuel tank is not vented to atmosphere, all fuel vapors are stored in a vapor collection canister. Purge ports for the canister are provided in the carburetor throttle body. They consist of timed purge ports only.

The timed bleed purge is located above the throttle valves next to the off-idle discharge ports. The timed bleed purge

operates during the off-idle range and also during part throttle and wide open throttle operation. This provides adequate purge capacity for the vapor collection canister and prevents over-rich mixtures from being added to the carburetor metering at any time.

MAIN METERING SYSTEM OPERATION (FIGURE 6E-47)

The main metering system supplies fuel to the engine from off-idle to wide-open throttle.

As the throttle valves are opened beyond the off-idle range allowing more air to enter the engine intake manifold, air velocity increases in the carburetor venturi to cause the main metering system to operate as follows:

Fuel from the float bowl flows between the fixed jets, and the main metering rods, into the main fuel wells. It passes upward in the main well and is bled with air by an air bleed located at the top of the well. The fuel is further bled air through calibrated air bleeds located near the top of the well in the carburetor bores. The fuel mixture then passes from the main well through the main discharge nozzles into the boost venturi. At the boost venturi, the fuel mixture then combines with the air entering the engine through the carburetor bores. It then passes as a combustible mixture through the intake manifold and on into the engine cylinders.

The main metering system is calibrated by tapered and stepped metering rods, operating in metering jets, and also through the main well air bleeds.

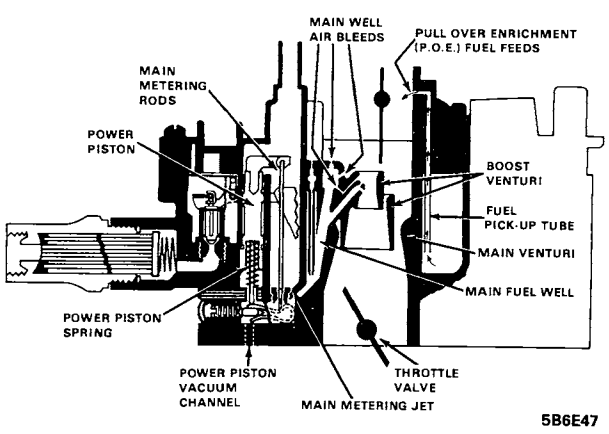


Figure 6E-47 - Main Metering System

ADJUSTABLE PART THROTTLE FEATURE

An adjustable part throttle feature is used to maintain a very close tolerance of fuel mixtures during part throttle operation. This includes a special power piston and primary main metering rods. The piston has a pin pressed into its base which protrudes through the float bowl and gasket and contacts an adjustable link in the throttle body. The metering rods are tapered at the upper metering end, so that fuel flow through the main metering jets is controlled by the depth of the taper in the main metering jet orifice. During production, the adjustable part throttle screw is turned in or out to place the taper at the exact point in the jet orifice to obtain the desired air/fuel mixture ratio. Once set, the adjustment screw is capped and no attempt should be made to readjust it.

PULL-OVER ENRICHMENT (P.O.E.)

A fuel pull-over enrichment (P.O.E.) circuit is used to supply extra fuel at higher engine speeds. The purpose of the supplementary fuel feeds is to allow the use of lean fuel mixtures during part throttle operation and still provide the extra fuel needed at higher engine speeds for good performance.

Two calibrated holes, one in each bore, are located just above the choke valve and are supplied with fuel through tubes which extend into the float bowl. During high carburetor air flows, low pressure created in the air horn bore pulls fuel from the high speed fuel feeds, supplementing fuel flow from the main metering system. The pull-over enrichment system begins to feed fuel at approximately eight pounds of air per minute and continues to feed at higher engine speeds to provide the extra fuel necessary for good engine performance.

POWER SYSTEM OPERATION (FIGURE 6E-48)

The power system provides extra mixture enrighment to meet power requirements under heavy engine loads and high-speed operation. The richer mixtures are supplied through the main metering system.

This consists of a vacuum operated power piston and springs located in a cylinder connected by a passage to intake manifold vacuum. The springs under the power piston pushes the piston upward against manifold vacuum force tending to pull the piston downward.

During part throttle and cruising ranges, manifold vacuum is sufficient to hold the power piston down against spring tension so that the larger diameter of the primary metering rod tip is held in the main metering jet to provide leaner mixtures during these periods of engine operation. However, as engine load is increased to a point where extra mixture enrichment is required, the power piston spring is overcome. The vacuum pull on the power piston and the tapered tip of the primary metering rods moves upward in the main metering jet orifice. The smaller diameter of the metering rod tip allows more fuel to pass through the main metering jet and enrich the fuel mixture to meet the added power requirements. As engine load is decreased, the manifold vacuum rises and extra mixture enrighment is no longer needed. The higher vacuum pulls downward on the power piston against spring tension, which moves the larger diameter of the metering rod into the metering jet orifice returning the fuel mixture to normal economy ranges.

ACCELERATING PUMP SYSTEM (FIGURE 6E-49)

During quick acceleration when the throttle is opened rapidly, the air flow and manifold vacuum change almost at the same time. The fuel, which is heavier, tends to lag behind causing a momentary leanness. The accelerator pump is used to provide the extra fuel necessary for smooth operation during this time.

The accelerating pump system consists of a spring loaded pump plunger and pump return spring, operating in a fuel

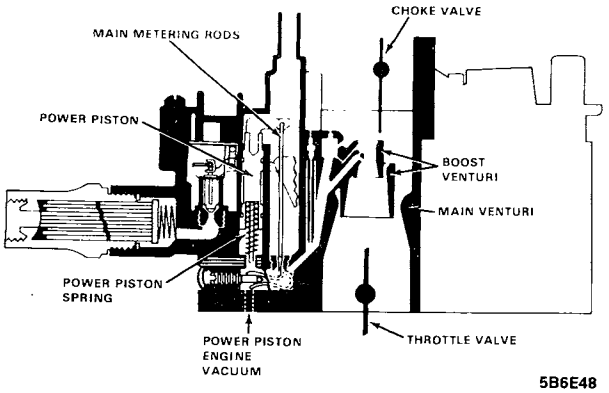


Figure 6E-48 - Power System

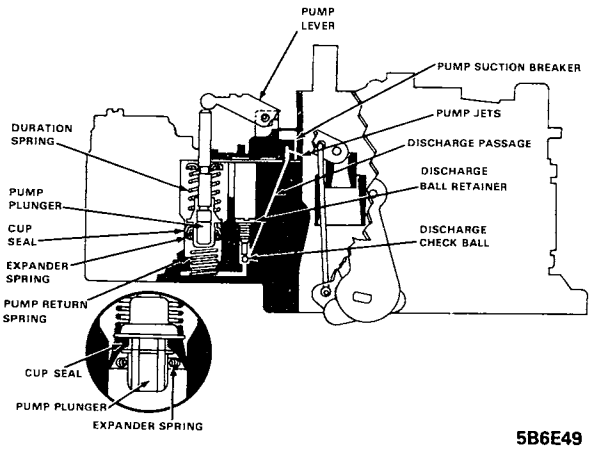


Figure 6E-49 - Accelerating Pump Sytsem

well. The pump plunger is operated by a pump lever on the air horn which is connected directly to the throttle lever by a pump rod.

When the pump plunger moves upward in the pump well, as happens during throttle closing, fuel from the float bowl enters the pump well through a slot in the top of the pump well. It flows past the synthetic pump cup seal into the bottom of the pump well. The pump cup is the floating type. (The cup moves up and down on the pump plunger head). When the pump plunger is moved upward, the flat on the top of the cup unseats from the flat on the plunger head and allows free movement of fuel through the inside of the cup into the bottom of the pump well. This also vents any vapors which may be in the bottom of the pump well so that a solid charge of fuel can be maintained in the fuel well beneath the plunger head.

When the throttle valves are opened, the connecting linkage forces the pump plunger downward. The pump cup seats instantly and fuel is forced through the pump discharge passage where it unseats the pump discharge check ball and passes on through the passage to the pump jets, located in the air horn, where the fuel sprays into the venturi of each bore.

An expander (garter) spring, located beneath the pump plunger cup, is used to assist in maintaining constant pump cup to pump well contact for good pump fuel delivery.

The pump plunger is spring loaded - the upper duration spring is balanced with the bottom pump return spring so that a smooth sustained charge of fuel is delivered during acceleration.

The pump discharge check ball seats in the pump discharge passage during upward motion of the pump plunger so that air will not be drawn into the passage; otherwise, a momentary lag in acceleration could result.

During high speed operation, a vacuum exists at the pump jets. A cavity just beyond the pump jets is vented to the top of the air horn, outside the carburetor bores. This acts as a suction breaker so that when the pump is not in operation, fuel will not be pulled out of the pump jets into the venturi area. This insures a full pump stream when needed and prevents any fuel "pull-over" from the pump discharge passage.

CHOKE SYSTEM OPERATION (FIGURE 6E-50)

The choke system operates as follows: The thermostatic coil in the choke housing is calibrated to hold the choke valve closed when the engine is cold. To close the choke valve, depress the accelerator pedal completely to allow the fast idle cam follower lever to clear the steps of the fast idle cam. At this point, tension of the thermostatic coil will rotate the choke valve to the closed position and through rotation of the upper choke lever and movement of the choke rod, the cam follower lever comes to rest on the high step of the fast idle cam. During engine cranking, the closed choke valve restricts air flow through the carburetor bores to provide a richer starting mixture. When the engine starts, manifold vacuum applied to the vacuum break diaphragm opens the choke valve to a point where the engine will run without loading or stalling lean. When the choke valve moves to the vacuum break position, the fast idle cam follower will drop from the high step on the fast idle cam to the next lower step (second step) when the throttle is opened.

The vacuum break unit includes a tension (bucking) spring in the diaphragm plunger head to off-set tension of the thermostatic coil. The bucking spring assists in controlling choke valve opening through the thermostatic coil so that leaner mixtures are maintained during warmer

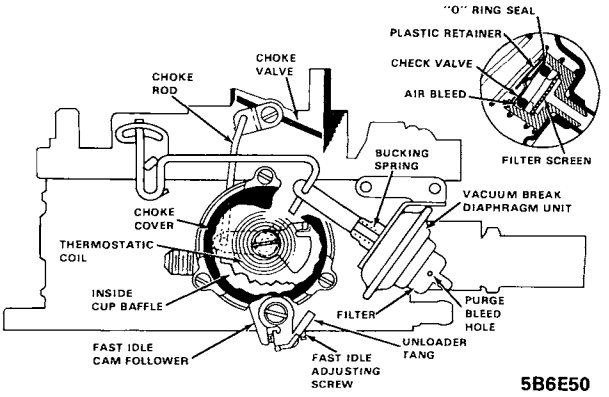


Figure 6E-50 - Choke System

temperatures and richer mixtures during cooler temperatures.

Engine vacuum supplied through an orifice in the choke housing pulls heat from the manifold heat stove into the housing and heat gradually relaxes choke coil tension which allows the choke valve to continue opening through inlet air pressure pushing on the off-set choke valve. As the thermostatic coil warms up, the choke coil lever in the housing moves the choke rod up to the wide open position. As the thermostatic coil warms up to the fully hot position, the choke coil lever allows the fast idle cam to drop down so that the cam follower is completely off the steps of the fast idle cam.

The choke system is equipped with an unloader feature which is designed to open the choke valve partially, should the engine become flooded or loaded. To unload the engine, the accelerator pedal must be depressed so that the throttle valves are held wide open. A tang on the lever on the choke side of the throttle shaft contacts the fast idle cam and through the intermediate choke shaft forces the choke valve slightly open. This allows extra air to enter the carburetor bores and pass on into the engine manifold to lean out the fuel mixture so that the engine will start.

DIAGNOSIS

Condition	Possible Cause	Correction
Engine cranks normally, will not start or starts hard.	1. Improper starting procedure used.	1. Check with the customer to determine if proper starting procedure is used.
	2. Choke valve not closing.	1. If caused by dirt and gum clean with suitable non-oil base solvent. 2. Adjust the choke thermostatic coil to specification. 3. Check the choke valve and linkage. Realign the choke valve or linkage as necessary. Replace parts as required. After any choke system work, check choke vacuum break setting and readjust as required.
	3. Insufficient fuel in carburetor.	1. Remove fuel line at carburetor. Connect hose to fuel line and run into metal container. Remove primary wire from distributor (Do Not Ground). Crank over engine—if there is no fuel, test pump. 2. Inspect fuel inlet filter. If plugged, replace. 3. If fuel filter is okay, remove air horn and check for a bind in the float mechanism or a sticking float needle. If okay, adjust float as specified. 4. Check inlet needle and seat for a sticky or binding condition. 5. Check fuel pump pressure and volume. 6. Check fuel by-pass line for correct restriction. Pinch off by pass line to prime fuel pump. 7. Check carburetor bowl for cracks or porous castings that leak fuel from the fuel bowl during engine off condition.

Condition	Possible Cause	Correction
	4. Engine flooded. To check for the flooding remove the air cleaner with the engine off, and look into the carburetor bores. Fuel will be dripping off nozzles and/or the carburetor bores will be very wet.	1. Check to determine if customer is using proper carburetor unloading procedure. Depress the accelerator to the floor and check the carburetor to determine if the choke valve is opening. If not, adjust choke unloader, as specified. 2. Check for carburetor flooding. Before removing the carburetor air horn, use the following procedure which may eliminate the flooding: Remove the fuel line at the carb. and plug. Crank and run the engine until the fuel bowl runs dry. Turn off the engine and connect fuel line. Then restart and run engine. This will usually flush dirt pass the carburetor float needle and seat. If dirt is in fuel system, clean the system and replace fuel filters as necessary. If excessive dirt is found, remove the carburetor unit, disassemble and clean. 3. Check float needle and seat for proper seal. If a needle and seat tester is not available, apply mouth suction to the needle seat with needle installed. If the needle does not seal, replace both needle and seat. 4. Check float for being loaded with fuel, bent float hanger or binds in the float arm. A float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with a known good float), replace the float assembly. 5. Adjust float as specified.
	5. Choke valve not opening.	1. If caused by dirt and gum, clean with suitable non-oil base solvent. 2. Adjust the choke thermostatic coil to specification. 3. Check the choke valve and linkage. Realign the choke valve or linkage as necessary. Replace parts as required. After any choke system work check choke vacuum break setting and readjust as required. 4. Check vacuum supply at hot air inlet to choke housing. 5. Check for plugged, restricted, or broken heat tubes. 6. Check routing of all hot air components.

Condition	Possible Cause	Correction
	6. Mechanical bowl vent valve adjustment (warm engine).	1. Adjust bowl vent valve to insure proper fuel bowl venting.
	7. Inoperative or malfunctioning accelerator pump system. A quick check of the pump system can be made as follows: With the engine off, look into the carburetor bores and observe pump shooters, while briskly opening throttle valves. A full stream of fuel should emit from each pump jet and strike the boost venturi area.	1. Check accelerator pump adjustment and operation. 2. Remove air horn and check cup and expander/spring. If cracked, scored or distorted, replace the pump plunger. 3. Check the pump inlet and discharge balls for proper seating and location.
	8. Loose, broken or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses—correct as necessary.
	9. Choke vacuum break unit is not adjusted to specification or is malfunctioning.	1. Adjust vacuum break assembly to specification. If adjusted okay, check the vacuum break unit for proper operation as follows: 1A.Connect a piece of hose to the nipple on the vacuum break unit and apply suction by mouth or use Tool J-23417 to apply vacuum. Plunger should move inward and hold vacuum. If not, replace the unit.
The EGR System Diagnosis should also be performed.		
Engine starts—will not keep running.	1. Loose, broken or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses—correct as necessary.
	2. Engine does not have enough fast idle speed when cold.	1. Check and reset the fast idle speed. 2. Check for free movement of fast idle cam. Correct as necessary.
	3. Idle speeds incorrect.	1. Check and reset speeds. 2. Check operation of idle stop solenoid if so equipped.
	4. Choke vacuum break unit is not adjusted to specifications or is malfunctioning.	1. Adjust vacuum break assembly to specification. If adjusted okay, check the vacuum break unit for proper operation as follows: 1A.Connect a piece of hose to the nipple on the vacuum break unit and apply suction by mouth or use Tool J-23417 to apply vacuum. Plunger should move inward and hold vacuum. If not, replace the unit.

Condition	Possible Cause	Correction
	5. Choke valve sticking and/or binding.	1. Clean and align linkage, or replace if necessary. Readjust if part replacement or realignment is necessary.
	6. Insufficient fuel in carburetor.	1. Check fuel pump pressure and volume. 2. Check for partially-plugged fuel inlet filter. Replace as required. 3. Check the float mechanism for sufficient float drop. Adjust as required. 4. Check inlet needle for sticky or binding condition. Replace both needle and seat as required.
	7. Engine flooding.	1. Check float needle and seat for proper seal. If a needle and seat tester is not available, apply mouth suction to the needle seat with needle installed. If needle does not seal, replace both needle and seat. 2. Check float for being loaded with fuel bent float hanger or binds in the float system. Repair or replace as required. 3. Adjust float as specified.
Engine idles abnormally rough and/or misses at idle and/or stalls.	1. Idle speed incorrectly set.	1. Reset idle speed per instructions on under hood label.
	2. Air leaks into carburetor bores beneath throttle valves, manifold leaks, or vacuum hoses disconnected or installed improperly.	1. Check all vacuum hoses leading into the manifold or carburetor base for leaks or being disconnected. Install or replace as necessary. Torque carburetor to manifold bolts and manifold to head bolt to specification. Using a pressure oil can, spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, replace the carburetor or manifold gaskets as necessary.
	3. Clogged or malfunctioning PCV system.	1. Check PCV system. Clean and/or replace as necessary.
	4. Carburetor flooding. Check by using procedure outlined under "Engine cranks normally will not start or starts hard."	1. Remove air horn and check float adjustments. 2. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If the needle does not seal replace both needle and seat.

Condition	Possible Cause	Correction
		3. Check float for being loaded with fuel. Check for bent float hanger or binds in the float arm. Repair or replace as required. A float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float), replace the float assembly. 4. If excessive dirt is found in the carburetor clean the fuel system and carburetor. Replace fuel filters as necessary.
	5. Clogged or restricted air cleaner element.	1. Replace as necessary.
	6. Mechanical bowl vent valve adjustment.	1. Check mechanical vent valve for proper adjustment. Adjust as required.
	7. Idle passages plugged or dirty.	1. Clean.
	8. Idle mixture adjustment.	1. Readjust per specified procedure in the Tune-Up section.
EGR system diagnosis should also be performed.		
Inconsistent idle speeds.	1. Idle speeds adjustment.	1. Reset speeds to specifications.
	2. Loose, broken or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses. Correct as necessary.
	3. Idle solenoid or wiring (if equipped).	1. Check solenoid and wiring.
	4. Malfunctioning throttle dashpot (if equipped).	1. Check for correct operation of dashpot. If dashpot holds throttle off idle for more than 3 seconds after throttle has been opened and released. Readjust or replace as necessary.
	5. Loose mounting bolts or leaky gaskets.	1. Torque carb and manifold bolts to specifications. Using a pressure oil can, spray light oil or kerosene around manifold legs and carb base. If engine RPM changes, replace the carb or manifold gaskets as required.
	6. Erratic fast idle cam operation.	1. Check choke linkage and cam for freedom of movement. Check hot air choke pipes for plugging or kinks. Repair and replace as required.

Condition	Possible Cause	Correction
	7. Throttle blades or linkage sticking and/or binding.	1. Check throttle linkage and throttle blades for smooth and free operation, correct if necessary.
	8. Carburetor Flooding.	1. Refer to carburetor flooding under "Engine idles rough"
	9. Clogged or malfunctioning PCV system.	1. Check PCV system, clean and/or replace as necessary.
	10. Mechanical bowl vent valve interference.	1. Check adjustment of bowl vent valve. Readjust as required.
	11. Malfunctioning TVS switch.	1. Perform TVS switch diagnosis. Replace as required.
EGR system diagnosis should also be performed.		
Engine diesels (after run) upon shut off.	1. Loose, broken or improperly routed vacuum hoses.	1. Check condition and routing of all vacuum hoses. Correct as necessary.
	2. Carb. idle speed adjustment.	1. Reset idle speeds per instructions on label in engine compartment.
	3. Idle Solenoid Adjustment (if equipped).	1. Check for correct operation of idle solenoid. Check for sticky or ginding solenoid.
	4. Malfunction of throttle dashpot (if equipped).	1. Check for correct operation of dashpot. If dashpot holds throttle off idle for more than 3 sec. after throttle has been opened and released, readjust or replace as necessary.
	5. Excessively lean idle mixture caused by air leaks into carb. beneath throttle valves, manifold vacuum leaks, or inoperative PCV system.	1. See corrections listed causes 2 and 3 under "Engine Idles Abnormally Rough and/or Stalls."
	6. Fast idle cam.	1. Check fast idle cam for freedom of operation. Clean or replace, as required. 2. Check choke heated air tubes for routing and/or plugging. 3. Check choke linkage for binding. Clean and correct as necessary.
	7. Excessively lean condition caused by carburetor idle mixture adjustment.	1. Adjust carburetor idle mixture as specified in the Tune-Up section.
	8. Malfunctioning TVS switch.	1. Perform TVS switch diagnosis. Replace as required.

Condition	Possible Cause	Correction
Engine hesitates on acceleration.	1. Accelerator pump adjustment.	1. Adjust accelerator pump to specification.
	2. Inoperative accelerator pump system. A quick check of the pump system can be made as follows: With the engine off, look in the carburetor bores and observe pump shooters while briskly opening throttle valves. A full stream of fuel should emit from each pump jet.	1. Remove air horn and check pump cup and expander spring. If cracked, scored, or distorted, replace the pump plunger. 2. Check the pump discharge ball for proper seating and location.
	3. Dirt in pump passages.	1. Clean and blow out with compressed air.
	4. Float level too low.	1. Check and reset float level to specification.
	5. Power enrichment system not operating.	1. Check for binding or stuck power pistons—correct as necessary.
	6. Air Cleaner operation.	1. Check operation of Thermac system. Replace and repair as required.
Engine has less than normal power at low speeds.	1. Loose, broken or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses.
	2. Clogged or inoperative PCV system.	1. Clean or replace as necessary.
	3. Choke sticking.	1. Check complete choke system for sticking or binding. 2. Check adjustment of choke thermostatic coil. 3. Check connections and operation of choke hot air system.
	4. Clogged or inoperative power system.	1. Remove air horn and check out free operation of power pistons.
	5. Air cleaner operation.	1. Check operation of thermac system. Repair or replace as required.

An engine tune-up should be conducted in conjunction with the carburetor diagnosis.

Less than normal power on heavy acceleration or at high speed.	1. Carburetor throttle valves not going wide open.	1. Correct throttle linkage as required. Check for proper installation of carpet and jute around accelerator pedal.
	2. Dirty or plugged fuel inlet filter.	1. Replace with a new fuel filter as required.

Condition	Possible Cause	Correction
	3. Insufficient fuel to carb.	1. Check fuel system, and fuel pump diagnosis. Repair and replace as required.
	4. Power enrichment system not operating.	1. Remove the air horn and check for free operation of both power pistons, clean and correct as necessary.
	5. Float level adjustments.	1. Check and reset float level to specification.
	6. Float drop adjustment.	1. Check and adjust float drop as specified.
	7. Main metering jets plugged or damaged.	1. If the main metering jets are plugged or dirty and excessive dirt is found in the fuel bowl, the carburetor should be completely disassembled and cleaned.
	8. Choke valve not opening.	1. Check choke hot air tube for proper installation, routing plugging or binds which would restrict hot air flow to choke housing. 2. Check adjustment of thermostatic coil. Readjust to specification as required.
	9. Excessively dirty or plugged air cleaner.	1. Replace as required.
	10. Air cleaner operation.	1. Check to assure that damper door is open to cold snorkel air during engine "off" condition. Repair as required.
	11. Restricted exhaust system.	1. Check exhaust system.
Complete engine tune-up should be performed in conjunction with carburetor diagnosis.		
Engine surges and/or misses.	1. Loose, broken or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses. Correct as necessary.
	2. PCV system clogged or malfunctioning.	1. Check PCV system. Clean or replace as necessary.
	3. Loose carburetor, EGR or intake manifold bolts and/or leaking gaskets.	1. Torque carburetor and manifold bolts to specification. Using a pressure oil can, spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, replace the carburetor or manifold gaskets as necessary. Check EGR mounting bolt torque.

Condition	Possible Cause	Correction
	4. Low or erratic fuel pump pressure.	1. Check fuel system and fuel pump diagnosis. Repair or replace as required.
	5. Contaminated fuel.	1. Check for contaminants such as water, dirt, etc., in fuel. Clean system if necessary.
	6. Fuel filter plugged.	1. Replace as necessary.
	7. Float level adjustment.	1. Check and reset float level to specification.
	8. Damaged float and/or needle and seat.	1. Check operation of system. Repair or replace as necessary.
	9. Power piston not operative.	1. Check for free movement of both power pistons. Clean or replace as necessary.
	10. Fuel jets or passages plugged or restricted.	1. Clean and blow out with compressed air.
	11. Air cleaner operation.	1. Check to assure that damper door is open to cold snorkel during engine "off" condition. Repair as required.
EGR system diagnosis should also be performed.		
Poor fuel economy and/ or changes in fuel economy.	1. Customer driving habits.	1. Run mileage test with customer driving, if possible. Make sure car has 2000-3000 miles for the "break-in" period.
	2. Loose, broken, or improperly routed vacuum hoses.	1. Check condition of all vacuum hose routings. Correct as necessary.
	3. Engine tune-up.	1. See Engine Tune-Up Procedure. 2. Check for restricted exhaust system and intake manifold for leakage. 3. Check carburetor mounting bolt torque.
	4. Fuel leaks.	1. Check fuel tank, fuel lines, fuel pump, and carburetor. Repair and replace as required for any fuel leakage.
	5. High fuel level in carburetor.	1. Check float level.
	6. Power system in carburetor not functioning properly. Power pistons sticking or metering rods out of jets.	1. Remove air horn and check for free movement of power pistons. Clean and correct as necessary.

Condition	Possible Cause	Correction
	7. Choke system mal-functioning.	1. Check choke heated air tubes for routing and/or plugging which would restrict hot air flow to choke housing. 2. Check choke linkage for binding. Clean or repair as required. 3. Check adjustment of thermostatic coil. Readjust to specification as required.
	8. Fuel being pulled from accelerator system into venturi through pump jets.	1. Fun engine at RPM where nozzles are feeding fuel. Observe pump jets. If fuel is feeding from jets, check the pump discharge ball, spring and retainer. Check pump discharge ball for proper seating by filling cavity above ball with fuel to level of casting. No "leak down" should occur with discharge ball, spring and retainer in place. Re-stake or replace leaking check ball.
	9. Restricted exhaust.	1. Check for excessive restriction in exhaust system.

MAINTENANCE AND ADJUSTMENT

EXTERNAL ADJUSTMENTS

The following adjustments must be performed in proper sequence to ensure proper carburetor function.

PUMP ADJUSTMENT (FIGURE 6E-51)

1. With fast idle cam follower off steps of fast idle cam, back out idle speed screw until the throttle valves are completely closed in bore.

2. Place pump rod in specified hole in lever.

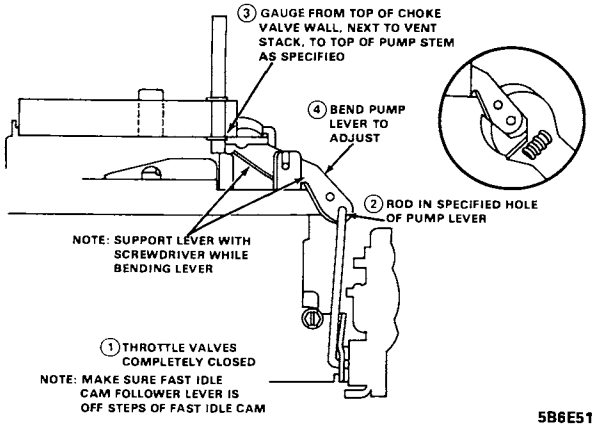


Figure 6E-51 - Pump Adjustment

3. Gauge from top of choke valve wall, next to vent stack, to top of pump stem.

4. Bend pump lever, as shown, to adjust (See Inset).

CHOKE COIL LEVER ADJUSTMENT (FIGURE 6E-52)

1. Loosen three retaining screws and remove the thermostatic cover and coil assembly from choke housing.

2. Push up on thermostatic coil tang (counterclockwise) until choke valve is closed.

3. Insert specified plug gauge in hole in choke housing.

4. Lower edge of choke coil lever should just contact side of plug gauge.

5. Bend choke rod at point shown to adjust (see inset).

FAST IDLE CAM (CHOKE ROD) ADJUSTMENT (FIGURE 6E-53)

1. Pre-set fast idle speed screw by adjusting to specifications.

2. Place cam follower lever on second step of fast idle cam held firmly against rise of high step.

3. Close choke valve by pushing upward on choke coil lever inside choke housing.

4. Gauge between upper edge of choke valve and inside air horn wall.

5. Bend tang on intermediate choke lever to adjust.

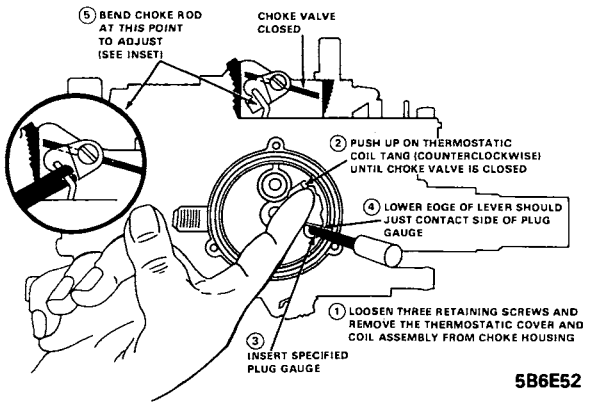


Figure 6E-52 - Choke Coil Lever Adjustment

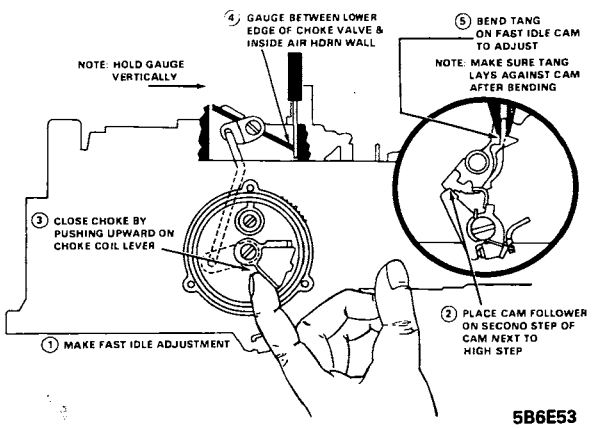


Figure 6E-53 - Fast Idle Cam (Choke Rod) Adjustment

VACUUM BREAK ADJUSTMENT (RICH SETTING) (FIGURE 6E-54)

1. Place cam follower on highest step of fast idle cam.

2. Push back rubber cap and plug bleed hole with tape. Remove tape and replace rubber cap after adjustment.

3. Seat diaphragm using outside vacuum source.

4. Push inside choke coil lever counterclockwise until tang on *outside lever* contacts vacuum break rod and bucking spring is compressed.

5. Place gauge between lower edge of choke valve and inside wall of air horn.

6. Bend lower end of rod to adjust.

VACUUM BREAK ADJUSTMENT (LEAN SETTING) (FIGURE 6E-54A)

1. Place cam follower on highest step of fast idle cam.

2. Push back rubber cap and plug bleed hole with tape. Remove tape and replace rubber cap after adjustment.

3. Seat diaphragm using outside vacuum source.

4. Push inside choke coil lever counterclockwise until

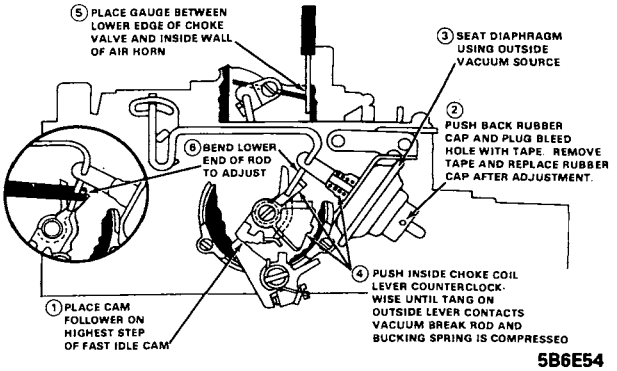


Figure 6E-54 - Vacuum Break Adjustment Rich Setting

tang on outside lever just contacts vacuum break rod. (Do not compress bucking spring).

5. Place gauge between lower edge of choke valve and inside wall of air horn.

6. Bend link to adjust.

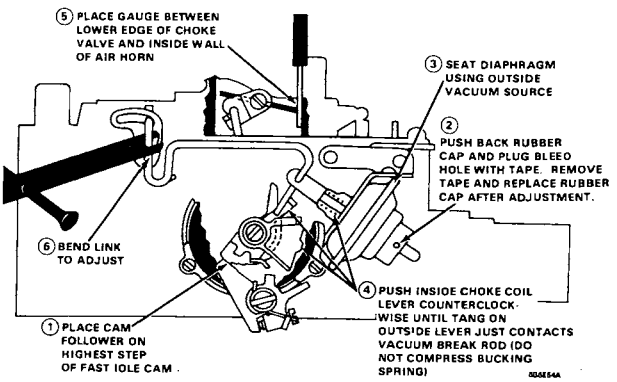


Figure 6E-54A - Vacuum Break Adjustment Lean Setting

UNLOADER ADJUSTMENT (FIGURE 6E-55)

1. Install choke thermostatic coil and cover assembly, with gasket, in choke housing and align index mark on cover with specified point on housing.

2. With choke valve completely closed, hold throttle valves wide-open. On warm engine, close choke valve by pushing up on vacuum break tang on intermediate choke lever that contacts fast idle cam. A rubber band may be used for this purpose.

3. Gauge between lower edge of choke valve and air horn wall.

4. Bend tang on fast idle lever as shown to adjust.

AUTOMATIC CHOKE COIL ADJUSTMENT (FIGURE 6E-56)

1. Install choke thermostatic coil and cover assembly with gasket between choke cover and choke housing.

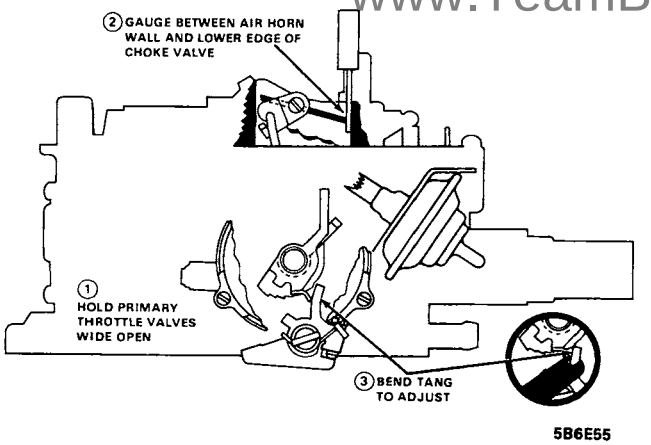


Figure 6E-55 - Unloader Adjustment

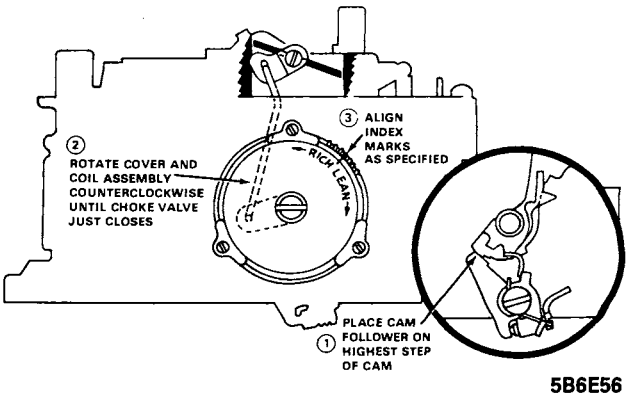


Figure 6E-56 Automatic Choke Coil Adjustment

2. Place the fast idle cam follower on the highest step of the fast idle cam.

3. Rotate cover and coil assembly counterclockwise until choke valve just closes.

4. Align index point on cover with specified index point on choke housing.

5. Tighten retaining screws.

IDLE SPEED-UP SOLENOID ADJUSTMENT

Follow the underhood tune-up lable instructions before proceeding. Engine must be at normal operating temperature.

1. Turn A/C "on".

2. With idle speed-up solenoid electrically energized (plunger extended), adjust plunger screw to obtain specified engine RPM.

3. Turn A/C "off". Solenoid plunger screw should move in away from tang on throttle lever (solenoid de-energized).

Use carburetor idle speed screw for normal curb idle speed.

MAJOR REPAIR

Always place carburetor on a suitable holding fixture when doing bench repairs.

AIR HORN REMOVAL

1. Remove upper choke lever from the end of choke shaft by removing retaining screw. Then rotate upper choke lever to remove choke rod from slot in lever.

2. Remove choke rod from lower lever inside the float bowl casting. Remove rod by holding lower lever outward with small screwdriver and turning rod counterclockwise.

3. Remove vacuum break hose. Then remove two (2) attaching screws and remove vacuum break control and bracket assembly. Remove vacuum break rod from vacuum diaphragm plunger and slotted lever at rear of carburetor.

CAUTION: *Do not place vacuum break assembly in carburetor cleaner.*

4. Remove nine (9) air horn to bowl attaching screws; two attaching screws are located in carburetor bore next to the venturi. (Two long screws, five short screws, two countersunk screws).

5. The air horn assembly may now be removed from the float bowl by opening the throttle valves wide open and lifting up on the air horn and turning sideways until the pump rod disengages from the upper pump lever.

CAUTION: *Care must be taken not to bend the pull-over enrighment fuel tubes in air horn casting. These are permanently pressed into the casting. DO NOT REMOVE.*

AIR HORN DISASSEMBLY

Further disassembly of the air horn is not required for cleaning purposes. If part replacement is required, proceed as follows:

1. Remove staking on (2) choke valve attaching screws, then remove choke valve and shaft from air horn.

FLOAT BOWL DISASSEMBLY

1. Remove pump plunger from pump well.

2. Remove air horn gasket from float bowl.

3. Remove pump return spring from pump well.

4. Remove plastic filler over float valve.

5. Remove power piston and primary metering rods by depressing piston stem and allowing it to snap free. Remove power piston inner and outer spring from the well. Piston may require several snaps to come free.

6. Remove metering rods from power piston by disconnecting tension spring from top of each rod then rotating rod to remove from hanger. Figure 6E-57.

7. Remove float assembly and float needle by pulling up on retaining pin. Remove float needle seat and gasket.

8. Remove main metering jets.

9. Remove pump discharge check ball retainer and check ball.

CHOKE DISASSEMBLY

1. Remove three retaining screws and retainers from choke cover and coil assembly. Then pull straight outward and remove cover and coil assembly from choke housing. Remove choke cover gasket. It is not necessary to remove baffle plate beneath the thermostatic coil. Distortion of the thermostatic coil may result if forced off the center retaining post on the choke cover.

2. Remove choke housing assembly from float bowl by removing retaining screw and washer inside the choke housing. The complete choke assembly can be removed from the float bowl by sliding outward. Remove plastic tube seal from choke housing. Remove lower choke lever from inside float bowl cavity by inverting bowl.

CAUTION: *Plastic tube seal should not be immersed in carburetor cleaner.*

3. To disassemble intermediate choke shaft from choke housing, remove coil lever retaining screw at end of shaft inside the choke housing. Then remove thermostatic coil lever from flats on intermediate choke shaft. Remove intermediate choke shaft from the choke housing by sliding outward. The fast idle cam can now be removed from the intermediate choke shaft.

CAUTION: *Remove the cup seal from inside choke housing shaft hole if the housing is to be immersed in carburetor cleaner. Also, remove the cup seal from the float bowl plastic insert for bowl cleaning purposes. Do not attempt to remove plastic insert.*

DISASSEMBLY OF REMAINING FLOAT BOWL PARTS

1. Remove fuel inlet nut, gasket and filter.

2. Remove throttle body by removing throttle body to bowl attaching screws.

3. Remove throttle body to bowl insulator gasket.

THROTTLE BODY DISASSEMBLY

1. Remove pump rod from throttle lever.

2. DO NOT REMOVE idle mixture limiter caps, unless it is necessary to replace the mixture needles or normal soaking and air pressure fails to clean the idle passages. If the idle mixture needles are removed, adjustment procedures are covered in the tune-up section. If necessary to remove the idle mixture needle, destroy plastic limiter cap. Do not install a replacement cap as a bare mixture screw is sufficient to indicate that the mixture has been readjusted.

CLEANING AND INSPECTION

1. Thoroughly clean carburetor castings and metal parts in an approved carburetor cleaner.

CAUTION: *Rubber parts, plastic parts, pump plungers and choke vacuum break should not be immersed in carburetor cleaner. However, the throttle valve shaft will withstand normal cleaning in carburetor cleaner.*

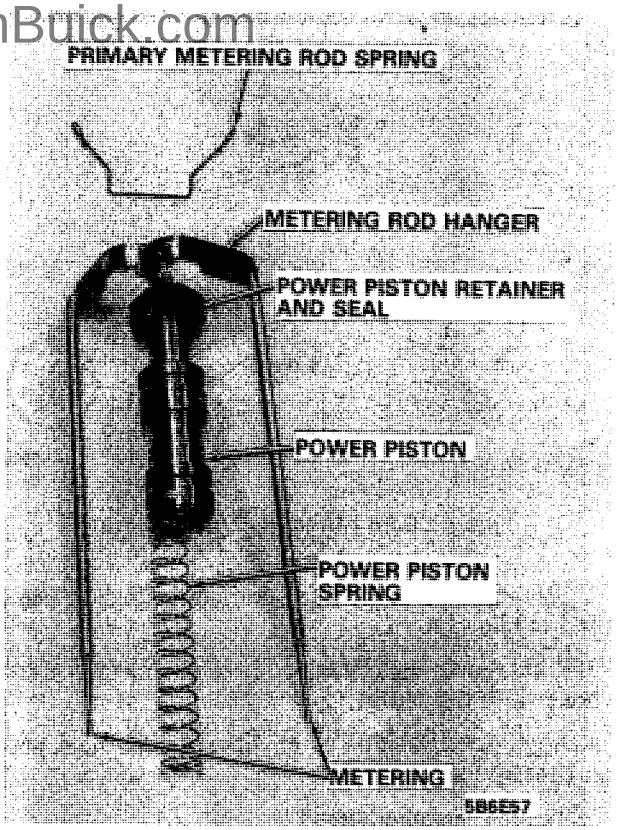


Figure 6E-57 - Primary Metering Rods

2. Blow out all passages in casting with compressed air.

CAUTION: *Do not pass drills through jets or passages.*

3. Examine float needle and seat for wear. Replace if necessary with float needle and seat assembly.

4. Inspect upper and lower surfaces of carburetor castings for damage.

5. Inspect holes in levers for excessive wear or out of round conditions. If worn, levers should be replaced.

6. Examine fast idle cam for wear or damage.

7. Check throttle lever and valves for binds or other damage. If throttle body is to be replaced and if the car is equipped with cruise control the cruise control lever must be removed by drilling the pop rivets. Install the cruise control lever on the new throttle lever with the correct part number pop rivets.

THROTTLE BODY REASSEMBLY

1. If removed, install idle mixture needles and springs until seated. Back out the mixture needles six turns as a preliminary idle adjustment. Final adjustment must be made on the engine using the procedures described under idle mixture adjustment.

2. Install lower end of pump rod in throttle lever by aligning tang on rod with slot in lever. End of rod should point outwards towards throttle lever.

FLOAT BOWL REASSEMBLY

1. Install new throttle body to bowl gasket over two locating dowels on bowl.

2. Install throttle body making certain throttle body is properly located over dowels on float bowl then install throttle body to bowl screws and tighten evenly and securely.

3. Install fuel inlet filter spring, fuel inlet filter, new gasket and inlet nut and tighten nut securely.

CAUTION: *Tightening beyond specified torque can damage nylon gasket.*

CHOKE HOUSING ASSEMBLY TO FLOAT BOWL

1. Install new cup seal into plastic insert on side of float bowl for intermediate choke shaft. Lip on cup seal faces outward, away from bowl.

2. Install fast idle cam onto the intermediate choke shaft (steps on fast idle cam face downward).

3. Install new rubber cup seal inside choke housing. Lips on seal face inward, towards carburetor bowl.

4. Carefully install fast idle cam and intermediate choke shaft assembly through seal in choke housing; then install thermostatic coil lever onto flats on intermediate choke shaft. Inside thermostatic choke coil lever is properly aligned when both inside and outside levers face towards fuel inlet. Install inside lever retaining screw into end of intermediate choke shaft. Tighten securely.

5. Install lower choke rod lever into cavity in float bowl. Install plastic tube seal into cavity on choke housing before assembling choke housing to bowl. Install choke housing to bowl sliding intermediate choke shaft into lower choke lever.

6. Install choke housing retaining screw and washer and tighten securely. The intermediate choke shaft lever and fast idle cam are in correct relation when the tang on lever is beneath the fast idle cam. Do not install choke cover and coil assembly until inside coil lever is adjusted.

COMPLETION OF FLOAT BOWL ASSEMBLY

1. Install pump discharge check ball and retainer in passage next to pump well. Tighten retainer securely.

2. Install main metering jets.

3. Install new needle seat assembly and gasket. Tighten securely. To make adjustment easier, bend float arm upward at notch in arm before assembly.

4. Install float by sliding float lever under pull clip from front to back. With edge of float lever in pull clip, hold float assembly at toe and install retaining pin from pump well side. Do not install float needle pull clip into holes in float arms.

5. Float level adjustment. Figure 6E-58.

a. With adjustable T-scale, measure from top of float bowl gasket surface (gasket removed) to top of float at toe. Locate gauging point 1/16" back from toe. Make sure float retainer is held firmly in place and arm of float is seated on float needle.

b. Bend float arm as necessary for proper adjustment by pushing on pontoon. Refer to adjustment chart for specification.

6. Install power piston springs into power piston well. If primary main metering rods were removed from hanger, re-install making sure that tension spring is connected to top of each rod Figure 6E-57. Install power piston assembly in well with metering rods properly positioned in metering jets. Press down firmly on plastic power piston retainer to make sure the retainer is seated in recess in bowl and the top if flush with the top of the bowl casting.

7. Install plastic filler block over float needle, pressing downward until properly seated.

8. Install pump return spring in pump well.

9. Install air horn gasket around primary main metering rods and piston. Position gasket over two dowels on secondary side of bowl.

10. Install pump plunger in pump well.

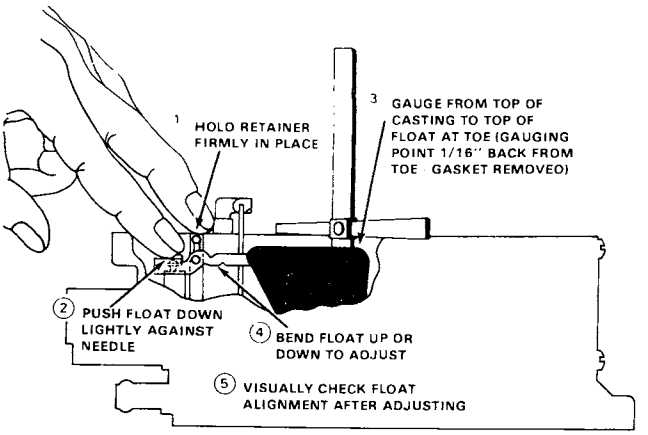


Figure 6E-58 - Float Adjustment

AIR HORN REASSEMBLY

1. If removed, install choke shaft, choke valve and two attaching screws. Tighten screws securely and stake lightly in place.

AIR HORN TO BOWL INSTALLATION

1. Holding the throttle valves wide open, rotate the air horn assembly so that the pump rod slides into specified hole in pump lever and then carefully lower air horn assembly onto the float bowl. Make sure the pull-over enrighment fuel tubes are positioned properly through the holes in the air horn gasket. Do not force the air horn assembly onto the float bowl, but rather lightly lower in place.

2. Install two long air horn screws, five short screws, and two countersunk screws into venturi area. All screws must be tightened evenly and securely.

3. Install vacuum break diaphragm rod into slotted lever and diaphragm plunger. Install vacuum diaphragm assembly to float bowl using two retaining screws through bracket. Tighten securely.

4. Install rubber hose between the vacuum diaphragm and vacuum tube on float bowl.

5. Connect choke rod into lower choke lever inside bowl cavity; then install upper end of rod into upper choke lever

and retain the choke lever to the end of choke shaft with attaching screw. Tighten securely. Make sure that the flats on the end of the choke shaft align with flats in the choke lever.

6. The thermostatic coil lever inside the choke housing has to be indexed properly before installing the choke thermostatic coil cover baffle and gasket assembly. Refer to the specifications section for adjustment information.

After the inside thermostatic coil lever is adjusted, the thermostatic coil, cover and gasket assembly should be installed and rotated counterclockwise until the choke valve just closes. At this point, the index cover should be set to specifications. Install three choke cover retainers and screws and tighten securely.

1975 2MC SERVICE SPECIFICATIONS

	260 ENGINE AUTO TRANS. A/C NON-CALIFORNIA	260 ENGINE AUTO TRANS. NON A/C NON-CALIFORNIA	260 ENGINE AUTO TRANS. A/C CALIFORNIA	260 ENGINE AUTO TRANS. NON A/C CALIFORNIA
PART NO.	7045156	7045298	7045358	7045354
ADJUSTMENTS				
FLOAT LEVEL	5/32	5/32	3/16	3/16
PUMP ROD LOCATION	INNER	INNER	OUTER	OUTER
PUMP ROD	9/32	9/32	5/16	5/16
CHOKE COIL LEVER	.120"	.120"	.120"	.120"
CHOKE ROD (CAM)	.130"	.130"	.130"	.130"
VACUUM BREAK FRONT	.150"	.150"	.150"	.150"
VACUUM BREAK REAR	.235"	.235"	.300"	.300"
UNLOADER	.285"	.285"	.300"	.300"
CHOKE COIL COVER	1 NOTCH RICH	1 NOTCH RICH	1 NOTCH RICH	1 NOTCH RICH

5B6E59

Figure 6E-59 - Specifications

(A) LUBRICATE BEFORE ASSEMBLY.

[B] CONDUIT FITTING MUST HAVE LOCKING TANGS EXPANDED AND LOCKED IN ATTACHING HOLE.

(A)(F) APPLY SEALER TO GASKET TOWARD DASH.

NOTE:

1. ACCELERATOR CABLE MUST NOT BE SUBJECTED TO SHARP BENDS DURING INSTALLATION.
2. ACCELERATOR CABLE MUST BE ROUTED SMOOTHLY AND FREE OF WIRES, HOSES OR OTHER OBSTRUCTIONS BETWEEN CONDUIT FITTINGS.
3. ACCELRATOR CABLE MUST BE INSTALLED IN THE BODY PRIOR TO ASSEMBLY TO THE ENGINE.

(A)[D] THE BRAIDED PORTION OF THE ACCELERATOR CABLE ASSEMBLY MUST NOT COME IN CONTACT WITH THE FRONT OF DASH SEALER DURING ASSEMBLY, REPAIR OR REPLACEMENT OF THE ASSEMBLY.

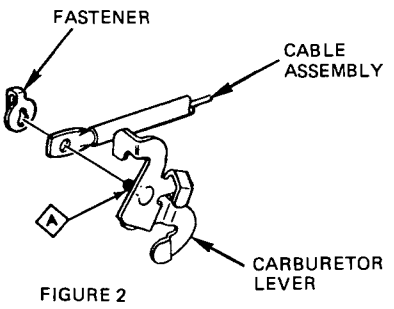
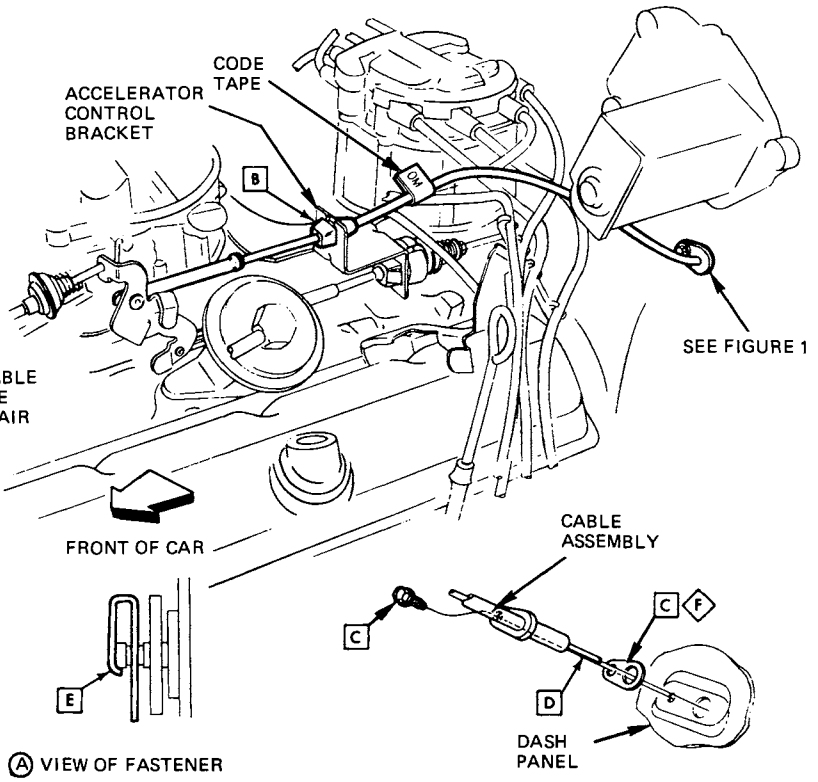


FIGURE 2



(A) VIEW OF FASTENER

FIGURE 1

(A)[E] FASTENER MUST BE INSTALLED WITH TANG SECURED OVER HEAD OF STUD.

5B6E60

Figure 6E-60 - Accelerator Controls "X" 260

ROCHESTER 4MC CARBURETOR

CONTENTS

DESCRIPTION AND OPERATION

GENERAL DESCRIPTION

The Rochester models M4MC-M4MCA Quadrajet carburetors for the 1975 Buick are similar in operation to the 1974 Quadrajet models except for the following:

1. All models have been recalibrated to meet performance and emission requirements for the 1975 engines.

2. The Adjustable Part Throttle (A.P.T.) feature is changed in that an adjustable metering rod assembly, operating in a fixed jet, has been added to the float bowl on the choke housing side of all models. The threaded metering rod is adjusted at the factory to provide close tolerance control of fuel flow to the main metering system, thereby better controlling air/fuel ratios during the part throttle range.

3. On models designated M4MCA, a barometric pressuresensitive aneroid (sometimes called a "bellows") is included as an integral part of the threaded A.P.T. metering rod assembly. The aneroid, being sensitive to air pressure to maintain control of part throttle air/fuel ratios.

4. All models except 400 V-8 engines use a multiple state power enrichment system, consisting of two power pistons, for more sensitive control of air/fuel ratios during light duty engine power requirements while providing richer mixtures during moderate to heavy engine loads. The system consists of an auxiliary power piston with single metering rod operating in a fixed jet, and a conventional main (primary) power piston with two metering rods operating in replaceable main metering jets. The primary and secondary power piston springs, used on past models, are no longer required.

5. An expander (garter) spring has been added beneath the plunger cup on the accelerator pump assembly for improved pump fuel delivery.

6. All models use the bowl mounted choke housing with thermostatic coil assembly. In addition, a dual vacuum break system is used for improved cold engine warm-up and driveaway performance.

The M4MC-M4MCA model Quadrajet carburetors are two stage carburetors of downdraft design. The triple venturi system (with 1-7/32" venturi) is used on the primary side of the Quadrajet carburetor, with small 1-3/8" throttle valve bores.

The secondary side has two large bores (2-1/4"). Using the air valve principle in the secondary side, fuel is metered in direct proportion to the air passing through the secondary bores.

The carburetor part number is stamped on a vertical section of the float bowl, near the secondary throttle lever. Refer to the part number on the bowl when servicing the carburetor. When replacing the float bowl assembly, follow the manufacturer's instructions contained in the service package so that the part number can be transferred to the new float bowl.

The primary side of the carburetor has six systems of operation. They are float, idle, main metering, power, pump, and choke. The secondary side has one metering system which supplements the primary main metering system and receives fuel from a common float chamber.

FLOAT SYSTEM (FIGURE 6E-62)

The float system operates in the following manner:

Fuel from the engine fuel pump enters the carburetor fuel inlet passage. It passes through the pleated paper filter element, fuel inlet valve, and on into the float bowl chamber. As the incoming fuel fills the float bowl to the prescribed level, the float pontoon rises and forces the fuel inlet valve closed, shutting off fuel flow. As fuel is used

from the float bowl, the float drops allowing the float valve to open, when more fuel again fills the bowl. This cycle continues, maintaining a constant fuel level in the float bowl.

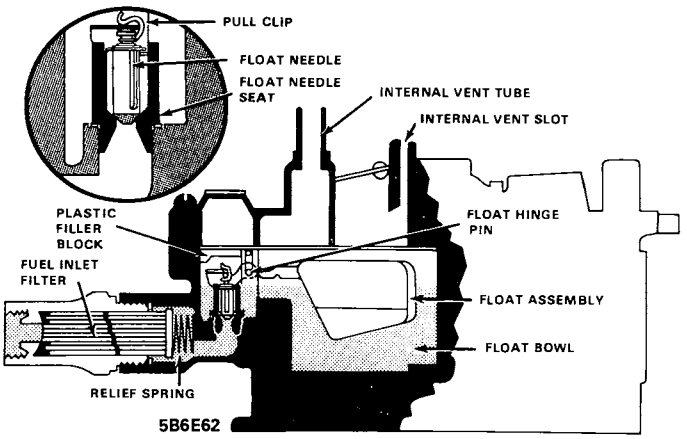


Figure 6E-62 - Float System - Typical

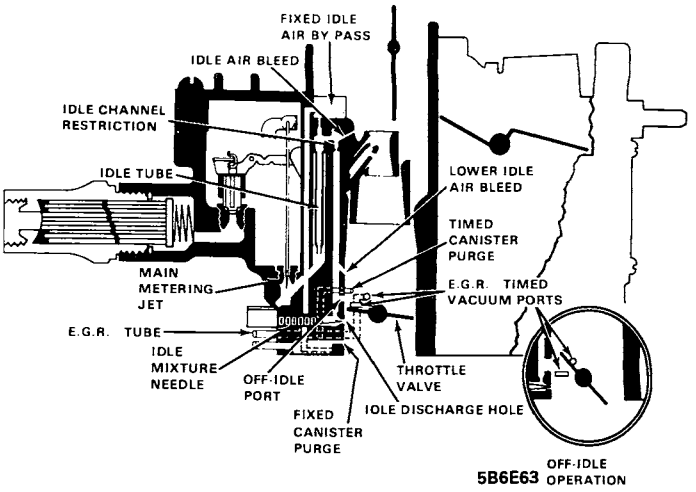


Figure 6E-63 - Idle System - Typical

The float bowl casting is revised to accomodate the addition of the auxiliary power piston and metering rod assembly and A.P.T. metering rod assembly. As a result, a new air horn gasket and new plastic filler block are used. The new plastic filler block, located in the top of the float chamber over the float valve, is used to prevent fuel slosh in the float bowl.

New float bowl disassembly and assembly procedures are required with the addition of the auxiliary power piston and metering rod assembly, and new plastic filler block.

IDLE SYSTEM (FIGURE 6E-63)

Each bore of the Quadrajet carburetor has a separate and independent idle system to supply the correct air/fuel mixture ratios during idle and off-idle operation.

The idle system operates as follows:

During curb idle, the throttle valves are held slightly open by the curb idle speed screw. The small amount of air passing between the throttle valves and bores is regulated by this screw to give the engine the desired idle speed. Since the engine requires very little air for idle and low speeds, fuel is added to the air to produce a combustible mixture by the direct application of vacuum (low pressure) from the engine manifold to the idle discharge holes below the throttle valve.

The idle mixture needles are adjusted at the factory to blend the correct amount of fuel mixture from the idle system with the air entering the engine at idle. Turning the idle mixture needles inward (clockwise) decreases the idle fuel discharge and turning the mixture needles outward (counterclockwise) enriches the engine idle mixture. Idle mixture needles are adjusted at the factory, and then limiter caps are installed to discourage idle mixture needle readjustment in the field.

M4MC-M4MCA carburetor models have a fixed idle air bypass system. The purpose of the idle air bypass system is to allow reduction in the amount of air going past the throttle valves so they can be nearly closed at idle.

A hot idle compensator, used on 400" V 8 models, is located in a chamber at the rear of the carburetor float bowl, adjacent to the secondary bores. Its purpose is to offset enrichening effects caused by excessive fuel vapors during hot engine operation.

EXHAUST GAS RECIRCULATION (E.G.R.)

An Exhaust Gas recirculation (E.G.R.) system is used on all models to control oxides of nitrogen (NOx) emissions. The E.G.R. valve is operated by a vacuum signal taken from the carburetor. Two punched ports, one located just above the throttle valve and the other near the upper edge of the throttle body casting, provide a timed vacuum signal port for E.G.R. valve operation in the off-idle and part throttle ranges of the carburetor.

CANISTER PURGE

In that the fuel tank is not vented to atmosphere and fuel vapors are collected in the carbon canister, purge ports are provided in the carburetor throttle body. The purge ports lead through passages to a common chamber in the throttle body to a purge tube which connects by a hose to the vapor canister.

The purge ports consist of a separate time canister purge.

A variable bleed purge is used to purge the carbon canister. The variable bleed purge consists of ports located in each bore next to the off-idle discharge port. The variable purge operates during idle, off-idle, part throttle, and wide-open throttle operation. This provides a controlled purge capacity for the carbon canister and prevents overrich mixtures from being added to the carburetor metering at any time.

MAIN METERING SYSTEM (FIGURE 6E-64)

The main metering system supplies fuel to the engine from

off- idle to wide-open throttle. The primary bores (two smaller bores) supply air and fuel during this range.

As the primary throttle valves are opened beyond the off-idle range allowing more air to enter the engine intake manifold, air velocity increases in the carburetor venturi to cause the main metering system to operate.

The main metering system is calibrated by tapered and stepped metering rods operating in metering jets and also through the main well air bleeds.

AUXILIARY POWER PISTON

An auxiliary power piston and single metering rod, located in front of the main (primary) power piston, is used for light duty power requirements except 400 V-8 engines.

During cruising speeds and light engine loads, manifold vacuum is high. In this period, the engine will run on leaner mixtures than required during heavy loads. When the vacuum is high, the auxiliary power piston is held downward against spring tension and the larger diameter of the metering rod is in the fixed metering jet orifice. This results in leaner fuel mixtures for economy operation. As engine load increases and engine manifold vacuum drops, spring pressure acting on the auxiliary power piston overcomes the vacuum pull and gradually lifts the metering rod partially out of the fixed metering jet. This enrichens the fuel mixture enough to give the desired power to overcome the added load.

MAIN (PRIMARY) POWER PISTON

Similar to previous Quadrajet carburetor models, a main (primary) power piston and two metering rods are used for heavy duty power requirements. Operation of the main (primary) power piston is similar to that previously described above for the auxiliary power piston. Vacuum, supplied through a separate channel, acting on the main power piston positions the metering rods in the metering jets during main metering system operation.

ADJUSTABLE PART THROTTLE (A.P.T.)

An adjustable part throttle (A.P.T.) feature is used in production to maintain very close tolerance of air/fuel mixtures during part throttle operation.

An adjustable metering rod assembly with filler spool, or combination aneroid-metering rod assembly, has been added to the float bowl on the choke housing side of all models. (For an explanation of aneroid, see Altitude Compensation below.) The adjustable metering rod, with or without aneroid, provides close tolerance control of fuel flow to the main metering system during the part throttle range.

The A.P.T. adjustment is performed at the factory by turning the threaded metering rod, or the aneroid-metering rod assembly, up or down to position the metering rod in a fixed metering jet located at the bottom of the fuel reservoir in the float bowl. This sets the part throttle air/fuel mixture to the desired flow band.

ALTITUDE COMPENSATION

On M4MCA models, a barometric pressure-sensitive aneroid (sometimes called a "bellows") is included as an integral part of the threaded A.P.T. metering rod assembly. The aneroid, being sensitive to air pressure change (such as altitude), automatically either expands or contracts to lower or raise the metering rod in the fixed metering jet. In this way, the aneroid responds to a change in air pressure to maintain control of part throttle air/fuel ratios.

The position of the A.P.T. metering rod in the fixed jet is extremely critical. Adjustment should NEVER be attempted unless a replacement is required. The threaded A.P.T. metering rod should be readjusted carefully following adjustment procedures provided.

POWER SYSTEM (FIGURE 6E-65)

The float bowl is revised to provide for a multiple stage power enrichment system.

The multiple stage power enrichment system consists of two power pistons for more sensitive control of air/fuel ratios during light duty engine power requirements while providing richer mixtures during moderate to heavy engine loads.

During moderate to heavy engine loads when a further drop in manifold vacuum occurs with increased throttle opening, the main (rear) piston spring overcomes the vacuum pull and raises the piston which lifts the two metering rods out of the metering jets for additional fuel enrichment for heavy duty power requirements.

The multiple stage (two piston) power enrichment system is specifically calibrated for the power requirements of each engine by controlling spring rates of each piston. The system requires no adjustment in the field; however, the main (rear) power piston and metering rod assemblies and the auxiliary (front) power piston and metering rod assembly are removable for normal cleaning and service replacement as needed.

The main (rear) and auxiliary (front) power piston springs must NOT be inter-changed. To prevent mixing of power piston springs at time of carburetor disassembly, lightly wrap a piece of masking tape around the auxiliary power piston spring for identification. Then, on re-assembly, remove the tape and install the spring in the front location beneath the auxiliary power piston with single metering rod.

ACCELERATING PUMP SYSTEM (FIGURE 6E-66)

During quick acceleration when the throttle is opened rapidly, the air flow and manifold vacuum change almost instantaneously. The fuel, which is heavier, tends to lag behind causing a momentary leanness. The accelerator pump is used to provide the extra fuel necessary for smooth operation during this time.

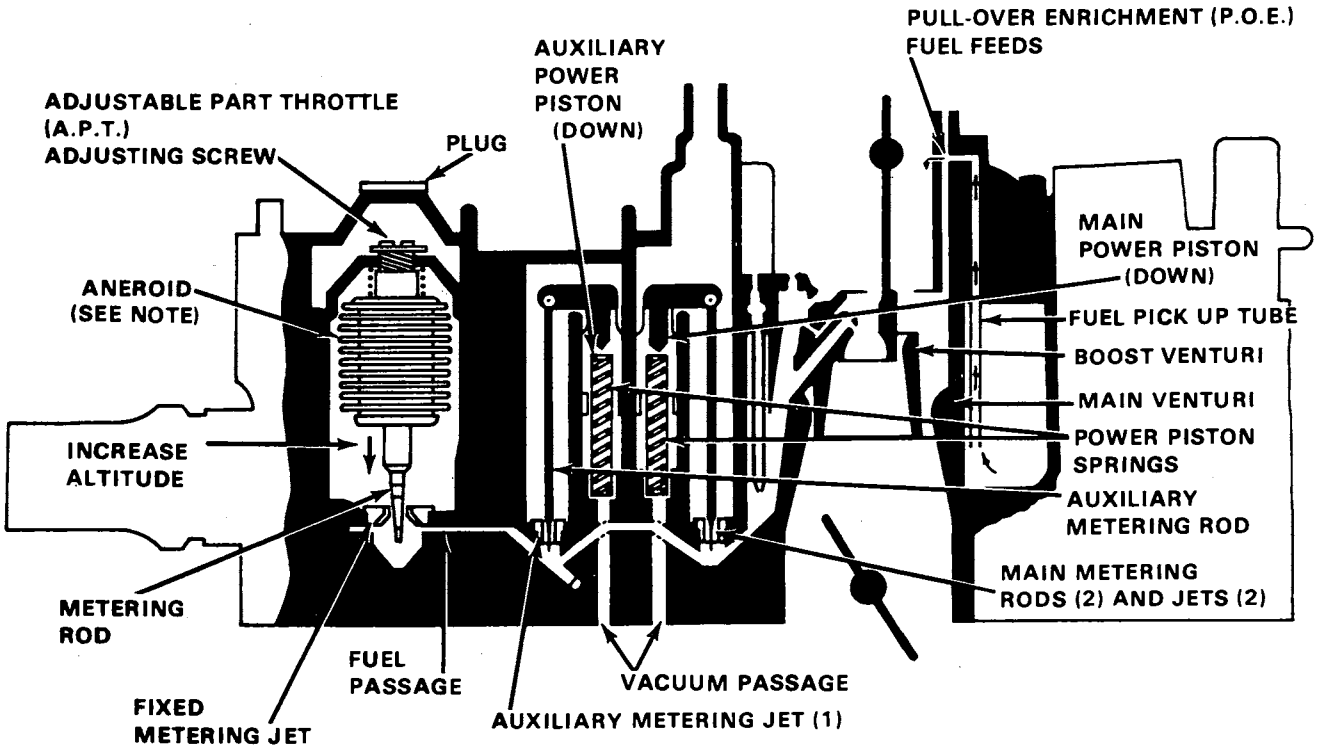


Figure 6E-64 - Main Metering System - Typical

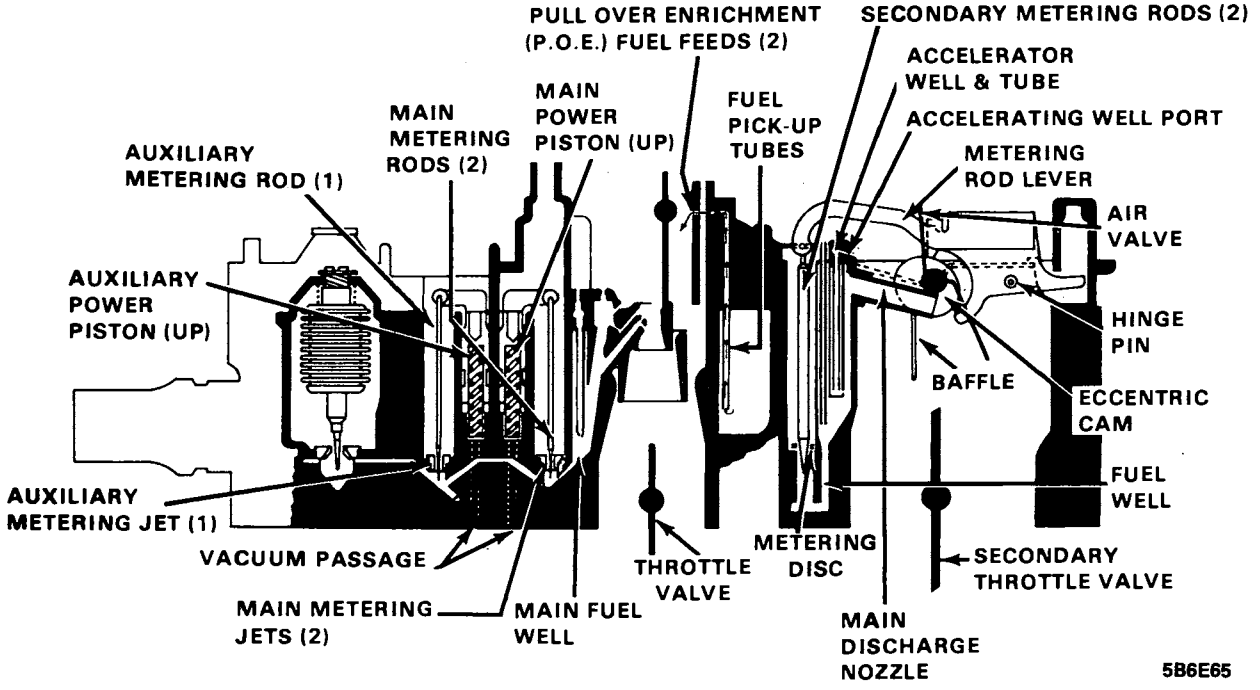


Figure 6E-65 - Power System - Typical

CHOKE SYSTEM (FIGURE 6E-67)

A dual vacuum break system, consisting of a front and rear vacuum break unit, is used on the float bowl on all models. A screw adjustment is added to the front vacuum break unit.

The choke system operates as follows:

The thermostatic coil in the choke housing is calibrated to hold the choke valve closed when the engine is cold. To close the choke valve, depress the accelerator pedal completely to allow the fast idle cam follower lever to clear the steps of the fast idle cam. At this point, tension of the thermostatic coil will rotate the choke valve to the closed position and through rotation of the upper choke lever and movement of the choke rod, the cam follower lever comes to rest on the high step of the fast idle cam. During engine cranking, the closed choke valve restricts air flow through the carburetor bores to provide a richer starting mixture. When the engine starts, manifold vacuum applied to the vacuum break diaphragm opens the choke valve to a point where the engine will run without loading or stalling. When the choke valve moves to the vacuum break position, the fast idle cam follower will drop from the high step on the fast idle cam to the next lower step (second step) when the throttle is opened. As the engine manifold is wetted and friction decreases after start, the second vacuum break diaphragm gradually opens the choke valve a little further to prevent stalling.

Engine vacuum supplied through an orifice in the choke housing pulls heat from the manifold heat stove into the housing and heat gradually relaxes choke coil tension which allows the choke valve to continue opening through inlet air pressure pushing on the off-set choke valve. As the thermostatic coil warms up, the choke coil lever in the housing moves the choke rod up in the slot in the upper choke lever to open the valve further to the near wide open position, while still keeping the cam follower lever on the low step of the fast idle cam. In this way, fast idle speed is maintained long enough to keep the engine from stalling, yet allows use of a choke coil which lets the choke valve open quickly. As the thermostatic coil warms up to the fully hot position, the choke coil lever allows the fast idle cam to drop down so that the cam follower is completely off the steps of the fast idle cam.

The rear vacuum break diaphragm unit includes a tension (bucking) spring in the diaphragm plunger head to offset tension of the thermostatic coil. The bucking spring assists in controlling choke valve opening through the thermostatic coil so that leaner mixtures are maintained during warmer temperatures and richer mixtures during colder temperatures.

A clean air purge feature is used in the rear vacuum break unit. A filter element is installed internally, with a small bleed hole located in the end cover of the diaphragm unit. During engine operation, vacuum acting upon the diaphragm unit pulls a small amount of filtered air through the bleed hole to purge the system of any fuel vapors or dirt contamination which might be pulled into the bleed check valve located inside the diaphragm unit. During adjustment of the rear vacuum break unit, it will be necessary to plug the bleed hole with a piece of tape.

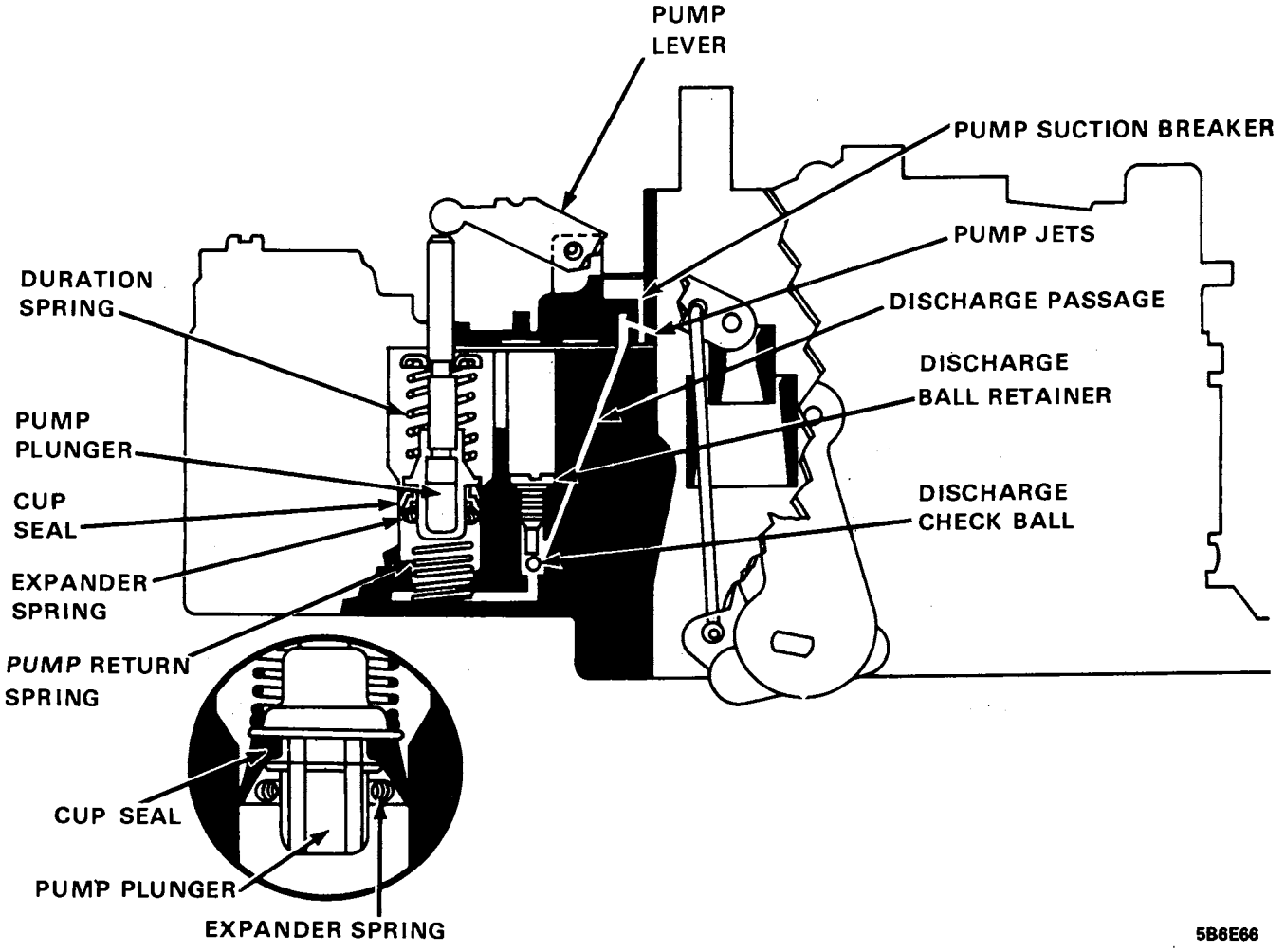


Figure 6E-66 - Accelerating Pump System - Typical

The secondary throttle valves are locked out during choke operation and the engine warm-up period. As the thermostatic coil warms up to the fully hot position, the choke coil lever allows the fast idle cam to drop down so that the cam follower is complete off the steps of the fast idle cam. As the fast idle cam drops down, it strikes the secondary throttle valve lock-out lever and pushes it away from the secondary throttle valve lock-out pin. This allows the secondary throttle valves to open for hot engine power requirements.

The choke system is equipped with an unloader feature which is designed to open the choke valve partially, should the engine become flooded or loaded. To unload the engine, the accelerator pedal must be depressed so that the throttle valves are held wide open. A tang on the lever on the choke side of the throttle shaft contacts the fast idle cam and through the intermediate choke shaft forces the choke valve slightly open. This allows extra air to enter the carburetor bores and pass on into the engine manifold to lean out the fuel mixture so that the engine will start.

As mentioned, an adjustment screw has been added to the front vacuum break diaphragm plunger stem and a change in vacuum break adjustment procedure is required on all models.

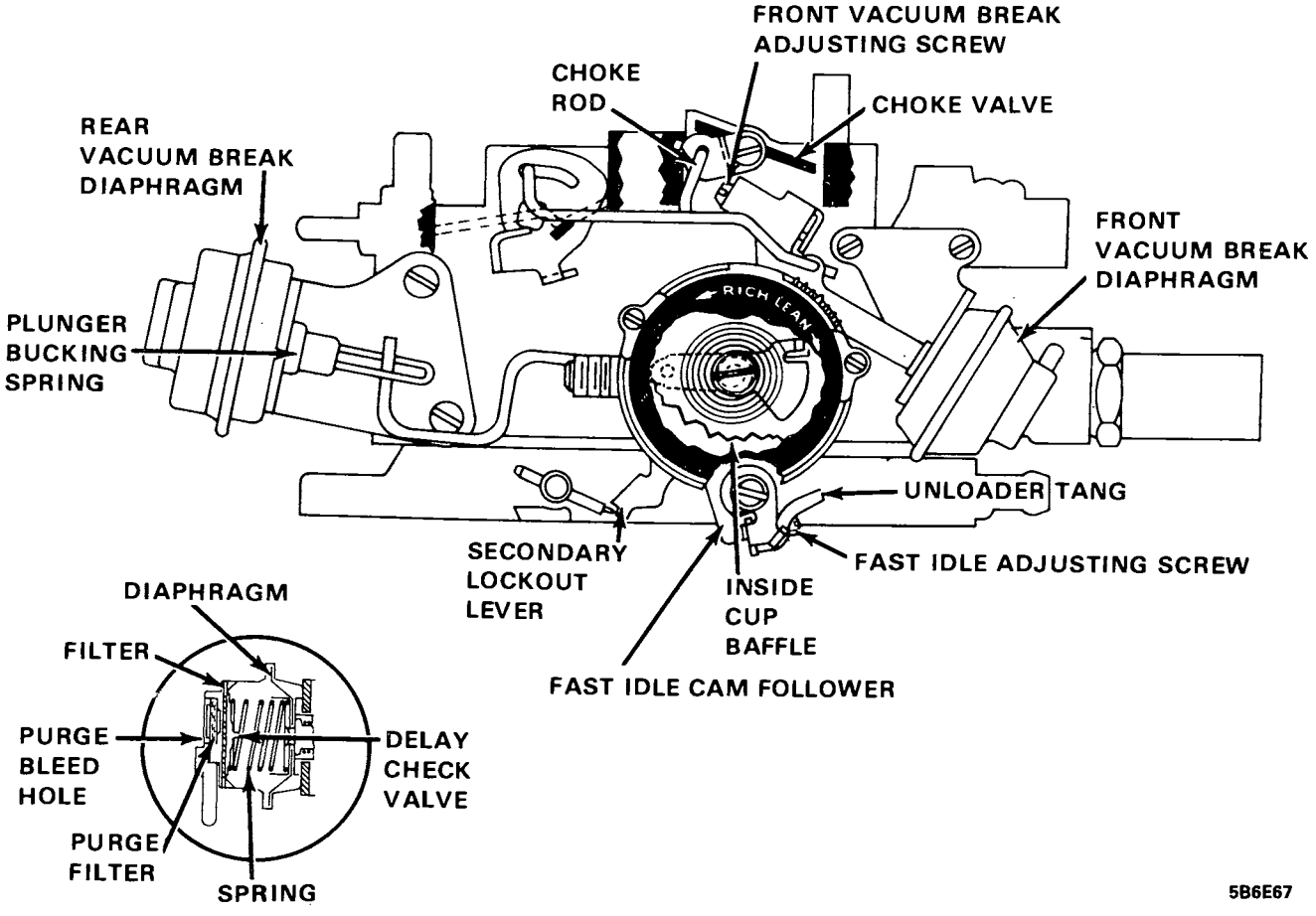


Figure 6E-67 - Choke System - Typical

DIAGNOSIS

Condition	Possible Cause	Correction
Engine cranks normally, will not start or starts hard.	1. Improper starting procedure used.	1. Check with the customer to determine if proper starting procedure is used.
	2. Choke valve not closing.	1. If caused by dirt and gum clean with suitable non-oil base solvent. 2. Adjust the choke thermostatic coil to specification.

Condition	Possible Cause	Correction
		3. Check the choke valve and linkage Realign the choke valve or linkage as necessary. Replace parts as required. NOTE: After any choke system work, check choke vacuum break setting and readjust as required.
	3. Insufficient fuel in carburetor.	1. Remove fuel line at carburetor. Connect hose to fuel line and run into metal container. Remove primary wire from distributor (Do Not Ground). Crank over engine—if there is no fuel flow, test pump. 2. Inspect fuel inlet filter. If plugged, replace. 3. If fuel filter is okay, remove air horn and check for a bind in the float mechanism or a sticking float needle. If okay, adjust float as specified. 4. Check inlet needle and seat for a sticky or binding condition. 5. Check fuel pump pressure and volume. 6. Check fuel by-pass line for correct restriction. Pinch off by pass line to prime fuel pump. 7. Check carburetor bowl for cracks or porous castings that leak fuel from the fuel bowl during engine off condition.
	4. Engine flooded. NOTE: To check for the flooding remove the air cleaner and with the engine off, look into the carburetor bores. Fuel will be dripping off nozzles and/or the carburetor bores will be very wet.	1. Check to determine if customer is using proper carburetor unloading procedure. Depress the accelerator to the floor and check the carburetor to determine if the choke valve is opening. If not, adjust choke and unloader, as specified. 2. Check for carburetor flooding. Before removing the carburetor air horn, use the following procedure which may eliminate the flooding: Remove the fuel line at the carb. and plug. Crank and run the engine until the fuel bowl runs dry. Turn off the engine and connect fuel line. Then restart and run engine. This will usually flush dirt passed the carburetor float needle and seat. If dirt is in fuel system, clean the system and replace fuel filters as necessary. If excessive dirt is found, remove the carburetor unit, disassemble and clean.

Condition	Possible Cause	Correction
		3. Check float needle and seat for proper seal. If a needle and seat tester is not available, apply mouth suction to the needle seat with needle installed. If the needle does not seal, replace both needle and seat. 4. Check float for being loaded with fuel, bent float hanger or binds in the float arm. A float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with a known good float), replace the float assembly. 5. Adjust float as specified.
	5. Choke valve not opening.	1. If caused by dirt and gum, clean with suitable non-oil base solvent. 2. Adjust the choke thermostatic coil to specification. 3. Check the choke valve and linkage. Realign the choke valve or linkage as necessary. Replace parts as required. NOTE: After any choke system work check choke vacuum break setting and readjust as required. 4. Check vacuum supply at hot air inlet to choke housing. 5. Check for plugged, restricted, or broken heat tubes. 6. Check routing of all hot air components.
	6. Mechanical bowl vent valve adjustment (warm engine).	1. Adjust bowl vent valve to insure proper fuel bowl venting.
	7. Inoperative or malfunctioning accelerator pump system. A quick check of the pump system can be made as follows: With the engine off, look into the carburetor bores and observe pump shooters, while briskly opening throttle valves. A full stream of fuel should emit from each pump jet and strike the boost venturi area.	1. Check accelerator pump adjustment and operation. 2. Remove air horn and check cup and expander/spring. If cracked, scored or distorted, replace the pump plunger. 3. Check the pump inlet and discharge balls for proper seating and location.
	8. Loose, broken or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses—correct as necessary.

Condition	Possible Cause	Correction
	9. Choke vacuum break units are not adjusted to specification or are malfunctioning.	1. Adjust both vacuum break assemblies to specification. If adjusted okay, check the vacuum break units for proper operation as follows: 1A.Connect a piece of hose to the nipple on the primary vacuum break unit and apply suction by mouth or use Tool J-23417 to apply vacuum. Plunger should move inward and hold vacuum. If not, replace the unit. 1B.Remove the auxiliary vacuum break diaphragm hose and rubber cover on filter element front vacuum break tube, and cover the small bleed hole with a piece of tape. Apply 10 in. hg. vacuum signal using Tool J-23417. Plunger should move inward and hold position. If not replace unit. If unit okay remove tape and reconnect unit.
NOTE: The EGR System Diagnosis should also be performed.		
Engine starts—will not keep running.	1. Loose, broken or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses—correct as necessary.
	2. Engine does not have enough fast idle speed when cold.	1. Check and reset the fast idle speed. 2. Check for free movement of fast idle cam. Correct as necessary.
	3. Idle speeds incorrect.	1. Check and reset speeds. 2. Check operation of idle stop solenoid if so equipped.
	4. Choke vacuum break units are not adjusted to specifications or are malfunctioning.	1. Adjust both vacuum break assemblies to specification. If adjusted okay, check the vacuum break units for proper operation as follows: 1A.Connect a piece of hose to the nipple on the primary vacuum break unit and apply suction by mouth or use Tool J-23417 to apply vacuum. Plunger should move inward and hold vacuum. If not, replace the unit. 1B.Remove the auxiliary vacuum break diaphragm hose. The complete recessed portion of the diaphragm where the bleed hole is located must be covered with a piece of tape. Apply 10 in. hg. vacuum signal using Tool J-23417. Plunger should move inward and hold position. If not, replace unit. If unit okay remove tape and reconnect unit.

Condition	Possible Cause	Correction
	5. Choke valve sticking and/or binding.	1. Clean and align linkage, or replace if necessary. Readjust if part replacement or realignment is necessary.
	6. Insufficient fuel in carburetor.	1. Check fuel pump pressure and volume. 2. Check for partially-plugged fuel inlet filter. Replace as required. 3. Check the float mechanism for sufficient float drop. Adjust as required. 4. Check inlet needle for sticky or binding condition. Replace both needle and seat as required.
	7. Engine flooding.	1. Check float needle and seat for proper seal. If a needle and seat tester is not vailable, apply mouth suction to the needle seat with needle installed. If needle does not seal, replace both needle and seat. 2. Check float for being loaded with fuel, bent float hanger or binds in the float system. Repair or replace as required. 3. Adjust float as specified.
Engine idles abnormally rough and/or misses at idle and/or stalls.	1. Idle speed incorrectly set.	1. Reset idle speed per instructions on under hood label.
	2. Air leaks into carburetor bores beneath throttle valves, manifold leaks, or vacuum hoses disconnected or installed improperly.	1. Check all vacuum hoses leading into the manifold or carburetor base for leaks or being disconnected. Install or replace as necessary. Torque carburetor to manifold bolts and manifold to head bolt to specification. Using a pressure oil can, spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, replace the carburetor or manifold gaskets as necessary.
	3. Clogged or malfunctioning PCV system.	1. Check PCV system. Clean and/or replace as necessary.
	4. Carburetor flooding. Check by using procedure outline under "Engine cranks normally will not start or starts hard."	1. Remove air horn and check float adjustments. 2. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If the needle does not seal replace both needle and seat.

Condition	Possible Cause	Correction
		3. Check float for being loaded with fuel. Check for bent float hanger or binds in the float arm. Repair or replace as required. A float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float), replace the float assembly. 4. If excessive dirt is found in the carburetor clean the fuel system and carburetor. Replace fuel filters as necessary. 5. Check carburetor bowl for cracks or porous castings that leak fuel from bowl to intake manifold.
	5. Clogged or restricted air cleaner element.	1. Replace as necessary.
	6. Mechanical bowl vent valve adjustment.	1. Check mechanical vent valve for proper adjustment. Adjust as required.
	7. Idle passages plugged or dirty.	1. Clean.
	8. Idle mixture adjustment.	1. Readjust per specified procedure in the Tune-Up section.
NOTE: EGR system diagnosis should also be performed.		
Inconsistent idle speeds.	1. Idle speeds adjustment.	1. Reset speeds to specifications.
	2. Loose, broken or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses. Correct as necessary.
	3. Malfunctioning throttle dashpot (if equipped).	1. Check for correct operation of dashpot. If dashpot holds throttle off idle for more than 3 seconds after throttle has been opened and released. Readjust or replace as necessary.
	4. Loose mounting bolts or leaky gaskets.	1. Torque carb and manifold bolts to specifications. Using a pressure oil can, spray light oil or kerosene around manifold legs and carb base. If engine RPM changes, replace the carb or manifold gaskets as required.
	5. Erratic fast idle cam operation.	1. Check choke linkage and cam for freedom of movement. Check hot choke pipes for plugging or kinks. Repair and replace as required.

Condition	Possible Cause	Correction
	6. Throttle blades or linkage sticking and/or binding.	1. Check throttle linkage and throttle blades (primary and secondary) for smooth and free operation, correct if necessary.
	7. Carburetor flooding.	1. Refer to carburetor flooding section under "Engine idles rough."
	8. Clogged or malfunctioning PCV system.	1. Check PCV system, clean and/or replace as necessary.
	9. Mechanical bowl vent valve interference.	1. Check adjustment of bowl vent valve. Readjust as required.
	10. Malfunctioning TVS switch.	1. Perform TVS switch diagnosis. Replace as required.
NOTE: EGR system diagnosis should also be performed.		
Engine diesels (after run) upon shut off.	1. Loose, broken or improperly routed vacuum hoses.	1. Check condition and routing of all vacuum hoses. Correct as necessary.
	2. Idle speed adjustment.	1. Reset idle speeds per instructions on label in engine compartment.
	3. Malfunction of throttle dashpot (if equipped).	1. Check for correct operation of dashpot. If dashpot holds throttle off idle for more than 3 sec. after throttle has been opened and released, readjust or replace as necessary.
	4. Excessively lean idle mixture caused by air leaks into carb. beneath throttle valves, manifold vacuum leaks, or inoperative PCV system.	1. See corrections listed causes 2 and 3 under "Engine Idles Abnormally Rough and/or Stalls."
	5. Fast idle cam.	1. Check fast idle cam for freedom of operation. Clean or replace, as required. 2. Check choke heated air tubes for routing and/or plugging. 3. Check choke linkage for bending. Clean and correct as necessary.
	6. Excessively lean condition caused by carburetor idle mixture adjustment.	1. Adjust carburetor idle mixture as specified in the Tune-Up section.
	7. Malfunctioning TVS switch.	1. Perform TVS switch diagnosis. Replace as required.
Engine hesitates on acceleration.	1. Accelerator pump adjustment.	1. Adjust accelerator pump to specification.

	2. Inoperative accelerator pump system. A quick check of the pump system can be made as follows: With the engine off, look in the carburetor bores and observe pump shooters while briskly opening throttle valves. A full stream of fuel should emit from each pump jet.	1. Remove air horn and check pump cup and expander spring. If cracked, scored, or distored, replace the pump plunger. 2. Check the pump discharge ball for proper seating and location.
	3. Dirt in pump passages.	1. Clean and blow out with compressed air.
	4. Float level too low.	1. Check and reset float level to specification.
	5. Air valve dashpot not functioning properly.	1. Check adjustment and operation of air valve dashpot (primary vacuum break).
	6. Air valve stuck or binding.	1. Check operation of secondary air valve. Check spring tension adjustment.
	7. Power enrichment system not operating.	1. Check for binding or stuck power pistons—correct as necessary.
	8. Air cleaner operation.	1. Check operation of thermac system. Replace and repair as required.
Engine has less than normal power at low speeds.	1. Loose, broken or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses.
	2. Clogged or inoperative PCV system.	1. Clean or replace as necessary.
	3. Choke sticking.	1. Check complete choke system for sticking or binding. 2. Check adjustment of choke thermostatic coil. 3. Check connections and operation of choke hot air system.
	4. Altitude compensation system. (If equipped).	1. Check aneroid for leakage. Replace if required. 2. Check jets and channels for plugging, clean and blow out passages.
	5. Clogged or inoperative power system.	1. Remove air horn and check out free operation of power pistons.

	6. Air cleaner operation.	1. Check operation of thermac system. Repair or replace as required.

NOTE: An engine tune-up should be conducted in conjunction with the carburetor diagnosis. The EGR system diagnosis should also be performed.

Less than normal power on heavy acceleration or at high speed.	1. Carburetor throttle valves not going wide open.	1. Correct throttle linkage as required. Check for proper installation of carpet and jute around acceleration pedal.
	2. Secondary throttle lockout not allowing secondaries to open.	1. Check for binding or sticking lockout lever. 2. Check for free movement of fast idle cam. 3. Check choke heated air system for proper connections and flow through system. 4. Check adjustment of choke thermostatic coil.
	3. Air valve stuck or binding.	1. Check for free operation of air valve. 2. Check spring tension adjustment. Make necessary adjustments and corrections.
	4. Dirty or plugged fuel inlet filter.	1. Replace with a new fuel filter as required.
	5. Insufficient fuel to carburetor.	1. Check fuel system, and fuel pump diagnosis. Repair and replace as required.
	6. Power enrighment system not operating.	1. Remove the air horn and check for free operation of both power pistons, clean and correct as necessary.
	7. Float level adjustments.	1. Check and reset float level to specification.
	8. Float drop adjustment.	1. Check and adjust float drop as specified.
	9. Main metering jets plugged or damaged.	1. If the main metering jets are plugged or dirty and excessive dirt is found in the fuel bowl, the carburetor should be completely disassembled and cleaned.
	10. Choke valve not opening.	1. Check choke hot air tube for proper installation, routing plugging or binds which would restrict hot air flow to choke housing. 2. Check adjustment of thermostatic coil. Readjust to specification as required.

	11. Excessively dirty or plugged air cleaner.	1. Replace as required.
	12. Air cleaner operation.	1. Check to assure that damper door is open to cold snorkel air during engine "off" condition. Repair as required.
	13. Restricted exhaust system.	1. Check exhaust system.

NOTE: Complete engine tune-up should be performed in conjunction with carburetor diagnosis.

Engine surges and/or misses.	1. Loose, broken or incorrect vacuum hose routing.	1. Check condition and routing of all vacuum hoses. Correct as necessary.
	2. PCV system clogged or malfunctioning.	1. Check PCV system. Clean or replace as necessary.
	3. Loose carburetor, EGR or intake manifold bolts and/or leaking gaskets.	1. Torque carburetor and manifold bolts to specification. Using a pressure oil can, spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, replace the carburetor or manifold gaskets as necessary. Check EGR mounting bolt torque.
	4. Low or erratic fuel pump pressure.	1. Check fuel system and fuel pump diagnosis. Repair and replace as required.
	5. Contaminated fuel.	1. Check for contaminants such as water, dirt, etc., in fuel. Clean system if necessary.
	6. Fuel filter plugged.	1. Replace as necessary.
	7. Float level adjustment.	1. Check and reset float level to specification.
	8. Damaged float and/or needle and seat.	1. Check operation of system. Repair or replace as necessary.
	9. Power piston not operative.	1. Check for free movement of both power pistons. Clean or replace as necessary.
	10. Fuel jets or passages plugged or restricted.	1. Clean and blow out with compressed air.
	11. Aneroid and altitude compensation system malfunctioning (if equipped).	1. Check bellows for leaks of external damage. Replace as necessary. 2. Check altitude jet and passages for plugging. Correct as necessary.

	12. Air cleaner operation.	1. Check to assure that damper door is open to cold snorkel air during engine "off" condition. Repair as required.
NOTE: EGR system diagnosis should also be performed.		
Poor fuel economy and/ or changes in fuel economy.	1. Customer driving habits.	1. Run mileage test with customer driving, if possible. Make sure car has 2000-3000 miles for the "break-in" period.
	2. Loose, broken, or improperly routed vacuum hoses.	1. Check condition of all vacuum hose routings. Correct as necessary.
	3. Engine tune-up.	1. See engine tune-up procedure. 2. Check for restricted exhaust system and intake manifold for leakage. 3. Check carburetor mounting bolt torque.
	4. Fuel leaks.	1. Check fuel tank, fuel lines, fuel pump, and carburetor. Repair and replace as required for any fuel leakage.
	5. High fuel level in carburetor.	1. Check float level.
	6. Power system in carburetor not functioning properly. Power pistons sticking or metering rods out of jets.	1. Remove air horn and check for free movement of power pistons. Clean and correct as necessary.
	7. Choke system malfunctioning.	1. Check choke heated air tubes for routing and/or plugging which would restrict hot air flow to choke housing. 2. Check choke linkage for binding. Clean or repair as required. 3. Check adjustment of thermostatic coil. Readjust to specification as required.
	8. Fuel being pulled from accelerator system into venturi through pump jets.	1. Run engine at RPM where nozzles are feeding fuel. Observe pump jets. If fuel is feeding from jets, check the pump discharge ball, spring and retainer. Check pump discharge ball for proper seating by filling cavity above ball with fuel to level of casting. No "leak down" should occur with discharge ball, spring and retainer in place. Restake or replace leaking check ball.
	9. Restricted exhaust.	1. Check for excessive restriction in exhaust system.

MAINTENANCE AND ADJUSTMENT

The following adjustments must be performed in the sequence listed to ensure proper carburetor function.

PUMP ROD ADJUSTMENT (FIGURE 6E-68)

CHOKE COIL LEVER ADJUSTMENT (FIGURE 6E-69)

FAST IDLE CAM (CHOKE ROD) PRELIMINARY ADJUSTMENT (FIGURE 6E-70)

AIR VALVE ROD ADJUSTMENT (FIGURE 6E-71)

REAR VACUUM BREAK ADJUSTMENT (FIGURE 6E-72) ALL EXCEPT 400-4BBL.

REAR VACUUM BREAK ADJUSTMENT (FIGURE 6E-72A) 400-4BBL. ONLY

FRONT VACUUM BREAK ADJUSTMENT (FIGURE 6E-73) ALL EXCEPT 400-4BBL.

FRONT VACUUM BREAK ADJUSTMENT (FIGURE 6E-73A) 400-4BBL. ONLY

AUTOMATIC CHOKE COIL ADJUSTMENT (FIGURE 6E-74)

UNLOADER ADJUSTMENT (FIGURE 6E-75)

SECONDARY THROTTLE VALVE LOCK-OUT ADJUSTMENT (FIGURE 6E-76)

SECONDARY CLOSING ADJUSTMENT (FIGURE 6E-77)

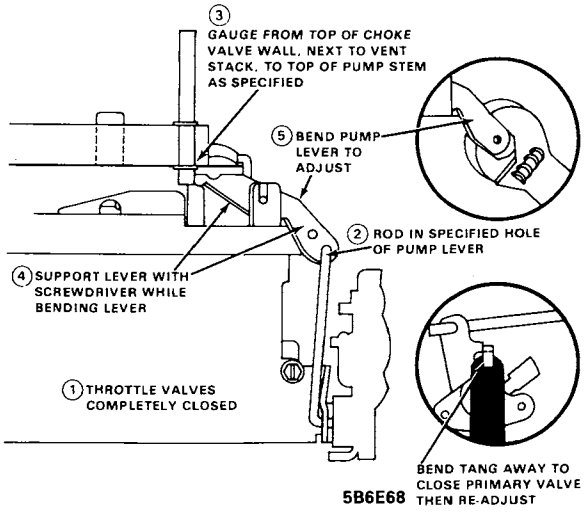


Figure 6E-68 - Pump Rod Adjustment

SECONDARY OPENING ADJUSTMENT (FIGURE 6E-78)

SECONDARY METERING ROD ADJUSTMENT (FIGURE 6E-79)

AIR VALVE SPRING WIND-UP ADJUSTMENT (FIGURE 6E-80)

THROTTLE CLOSING DASHPOT ADJUSTMENT (FIGURE 6E-80A)

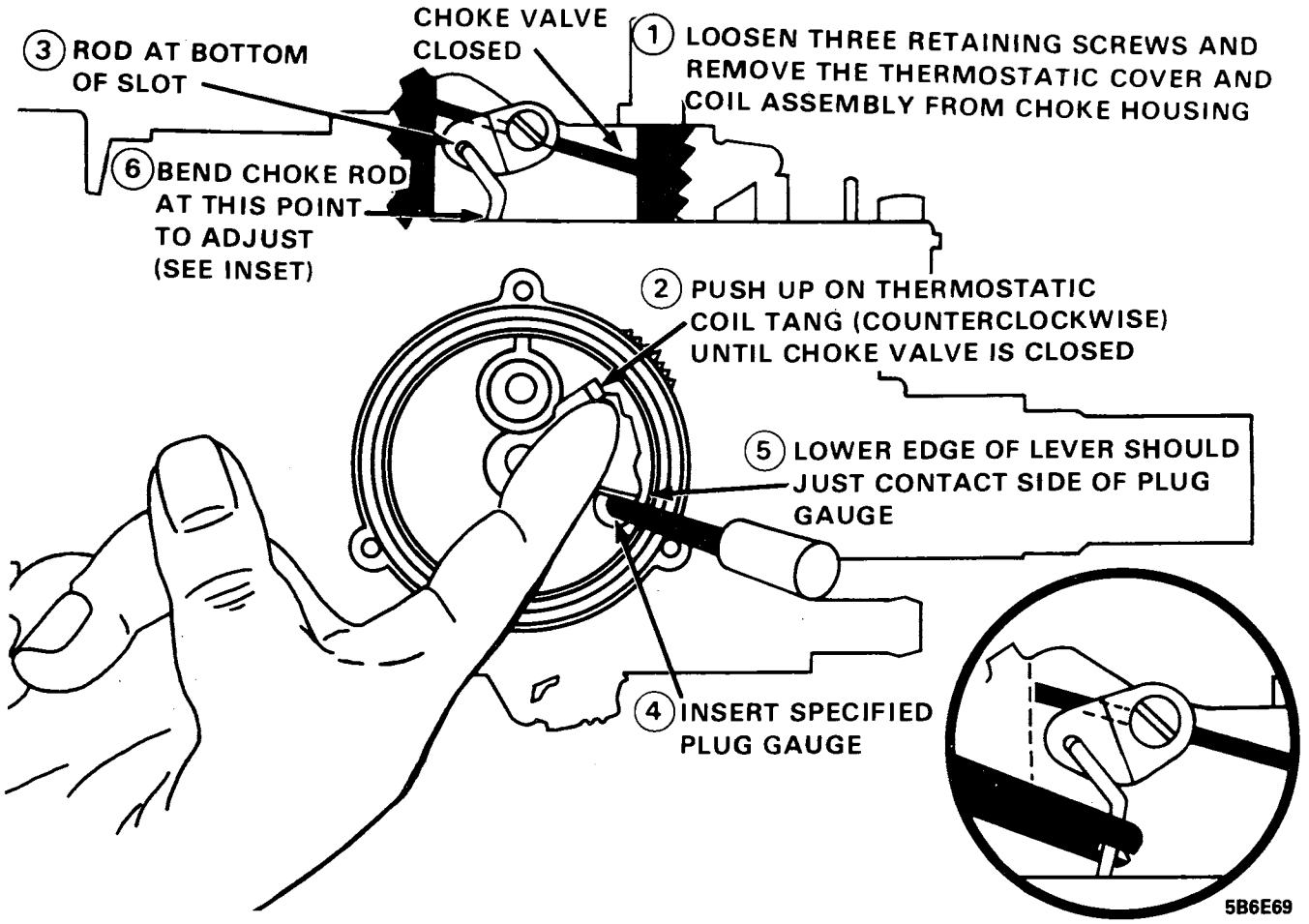


Figure 6E-69 - Choke Coil Lever Adjustment

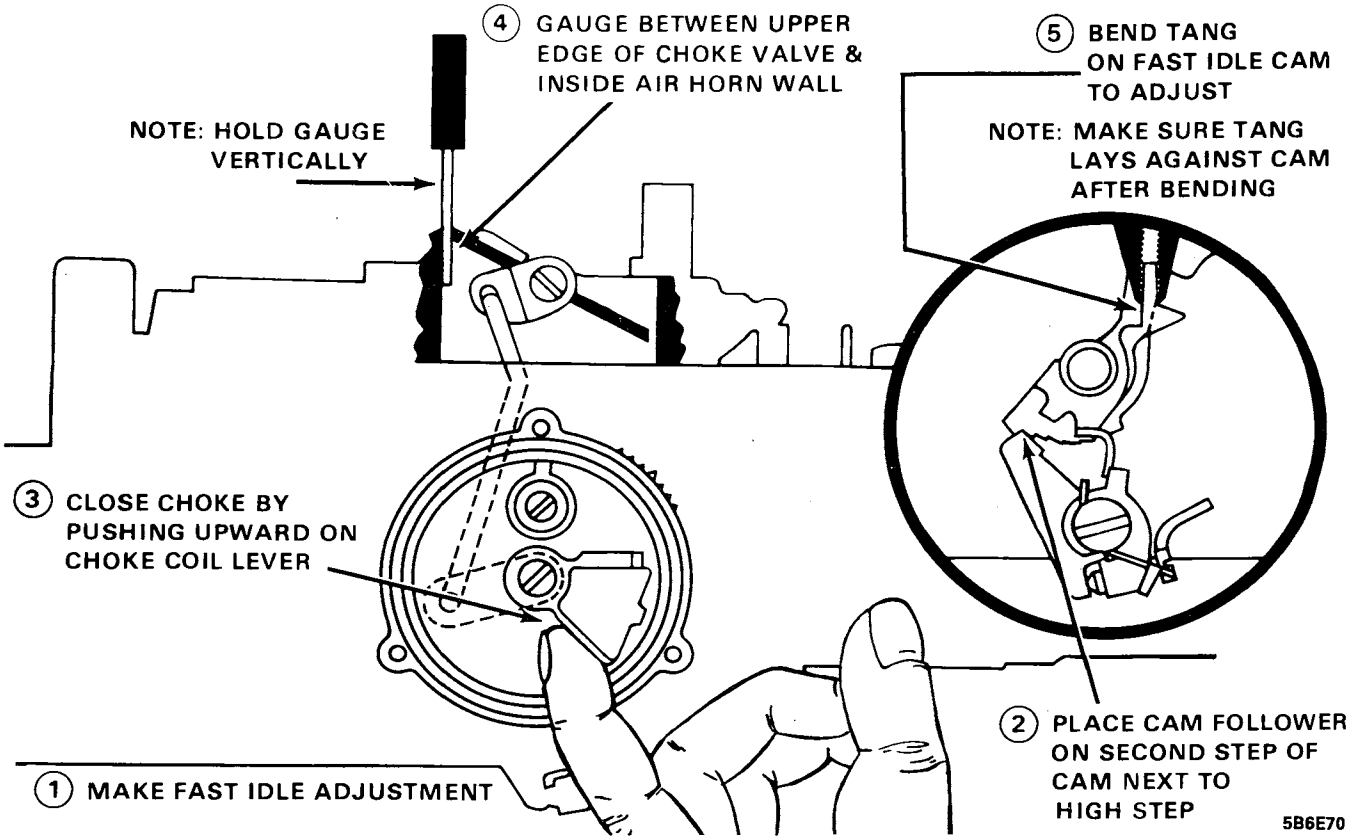


Figure 6E-70 - Fast Idle Cam (Choke Rod) Preliminary Adjustment

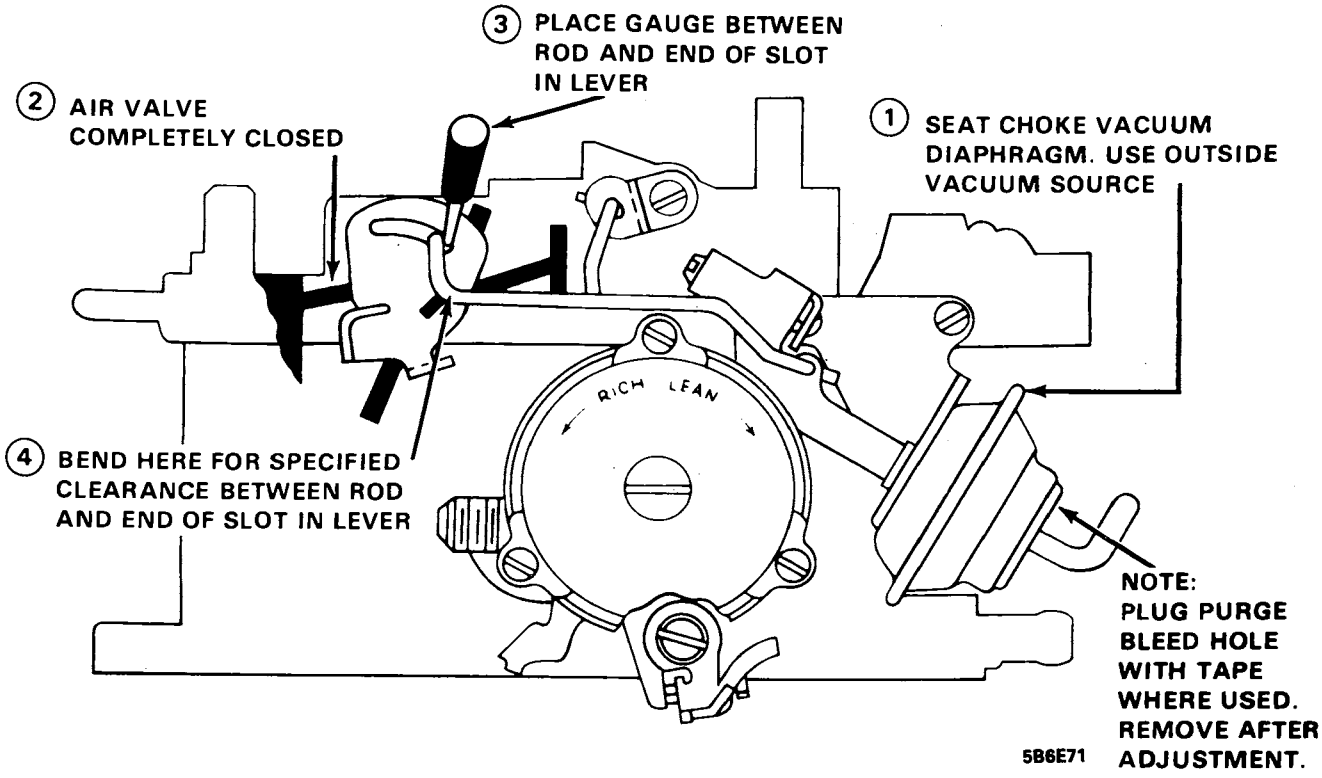


Figure 6E-71 - Air Valve Rod Adjustment

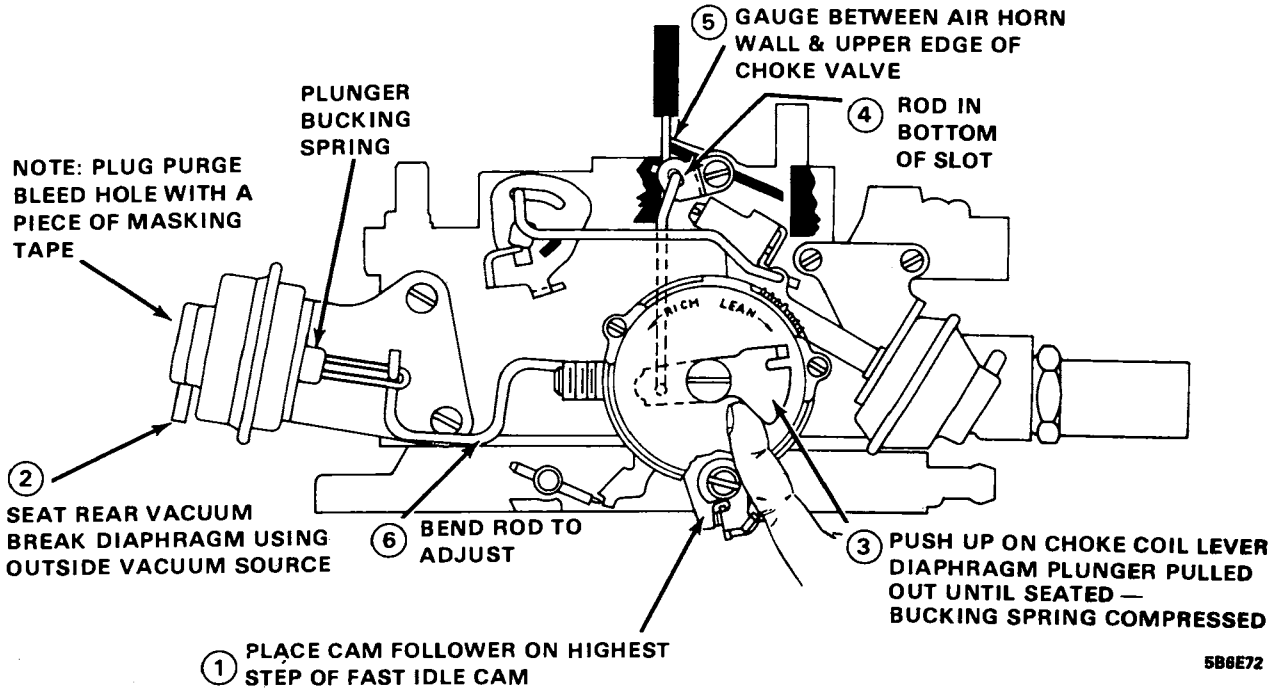


Figure 6E-72 - Rear Vacuum Break Adjustment - All Except 400-4Bbl.

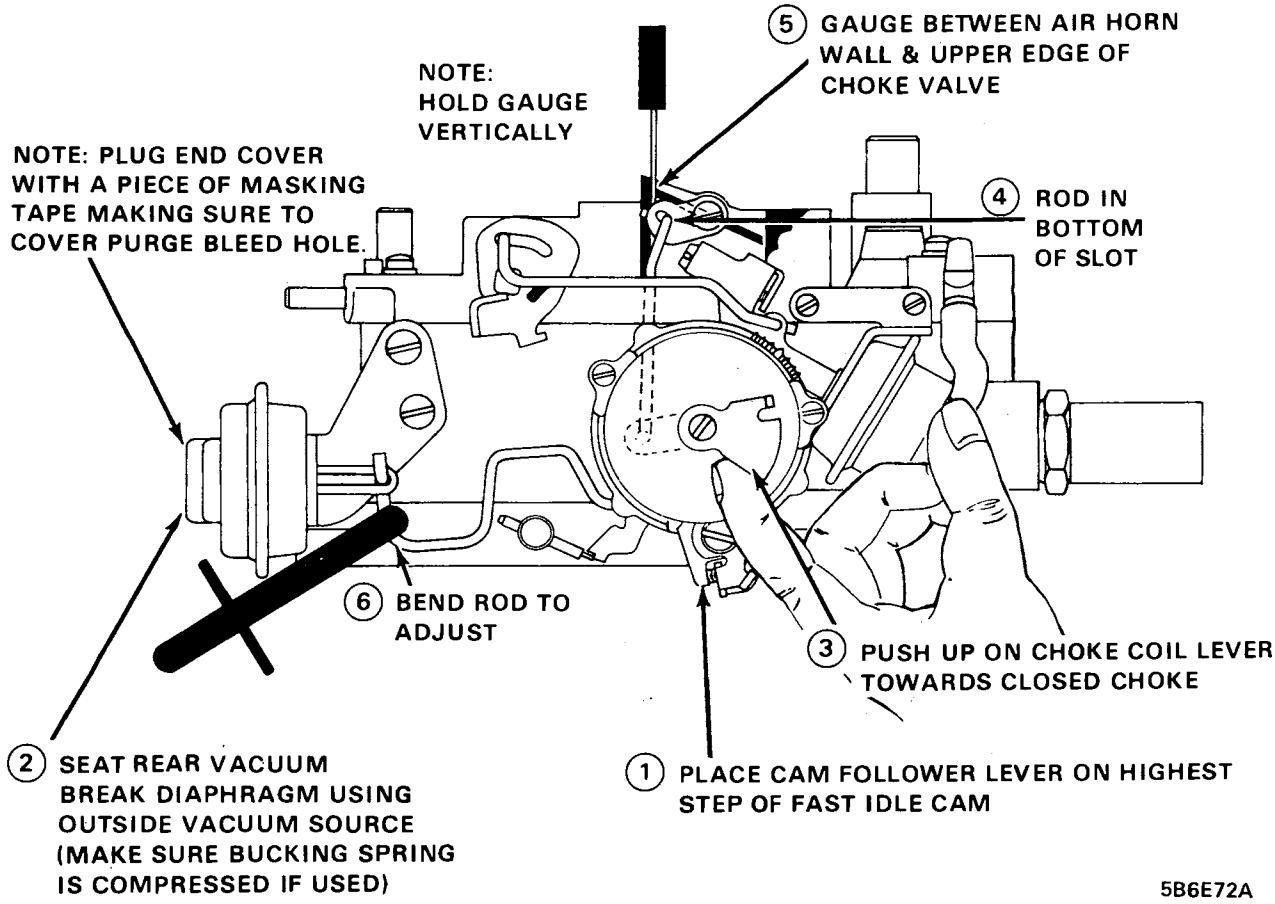


Figure 6E-72A - Rear Vacuum Break Adjustment - 400-4Bbl. Only

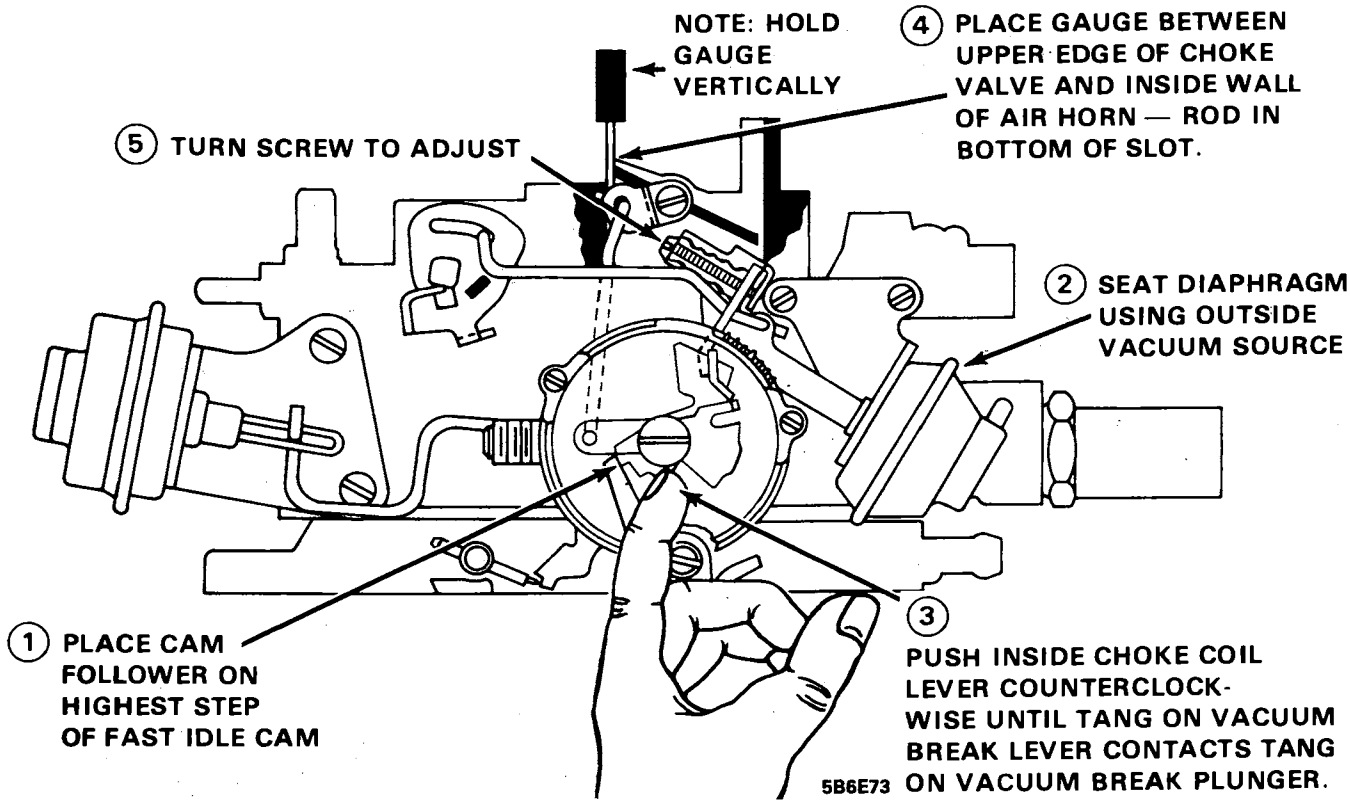


Figure 6E-73 - Front Vacuum Break Adjustment - All Except 400-4Bbl.

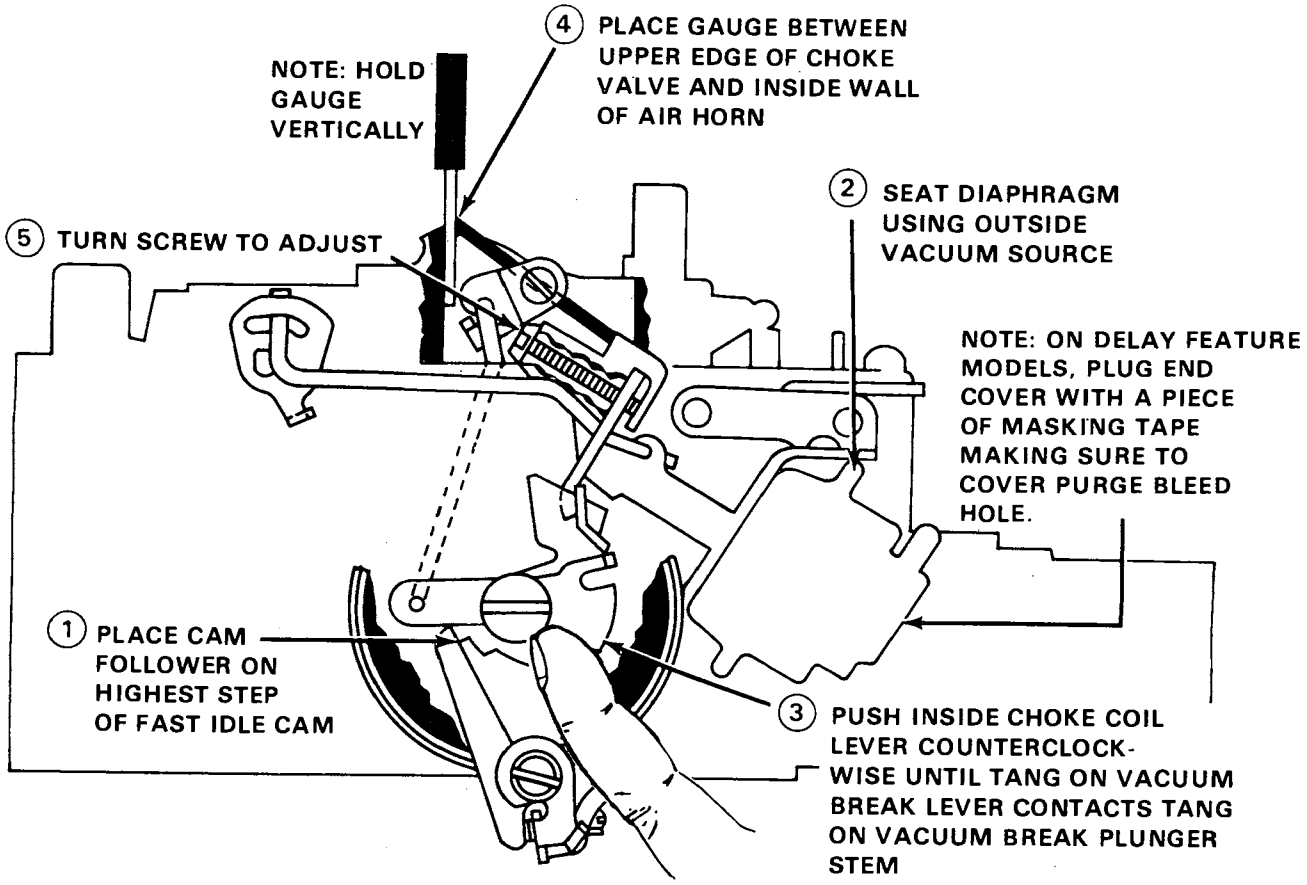


Figure 6E-73A - Front Vacuum Break Adjustment - 400-4Bbl. Only

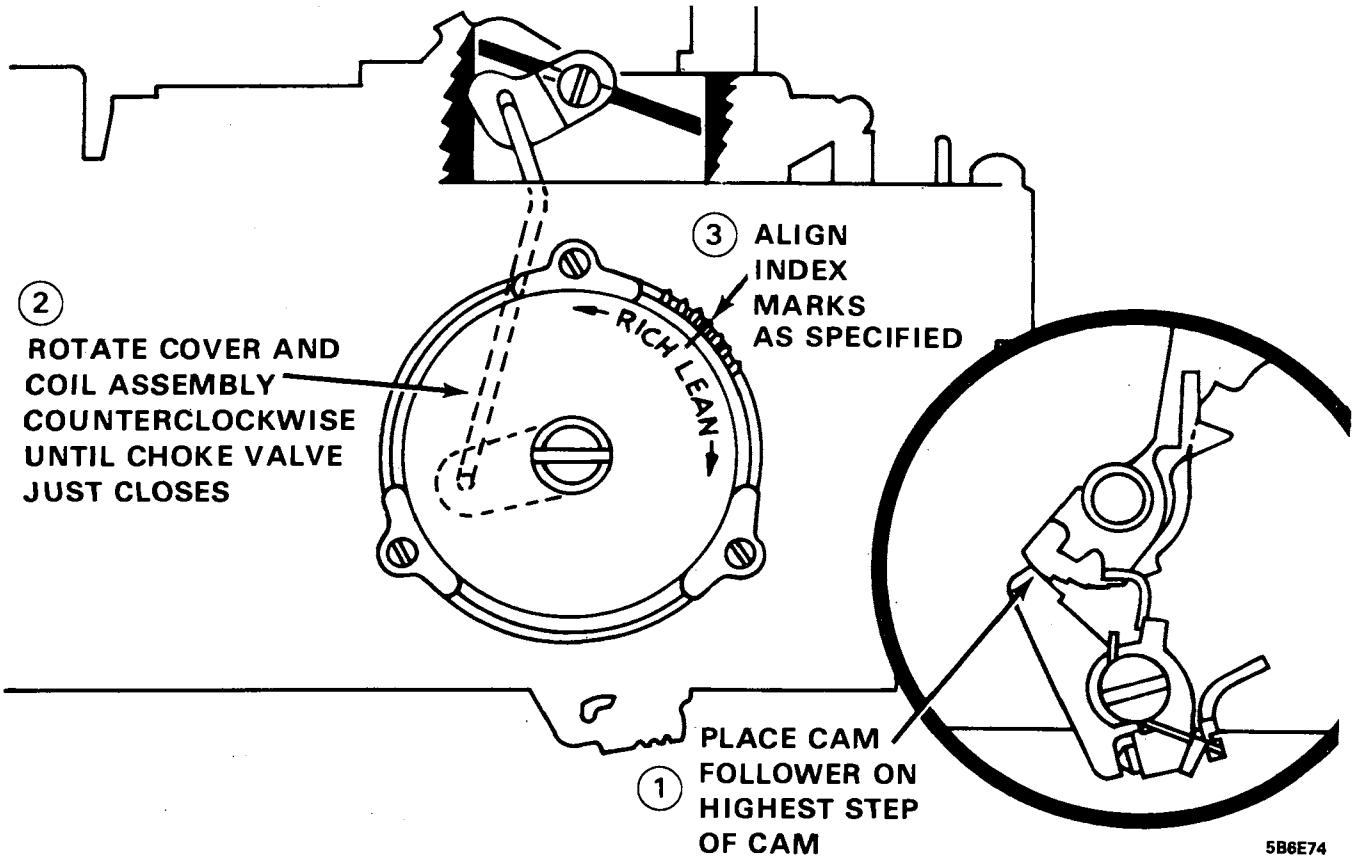


Figure 6E-74 - Automatic Choke Coil Adjustment

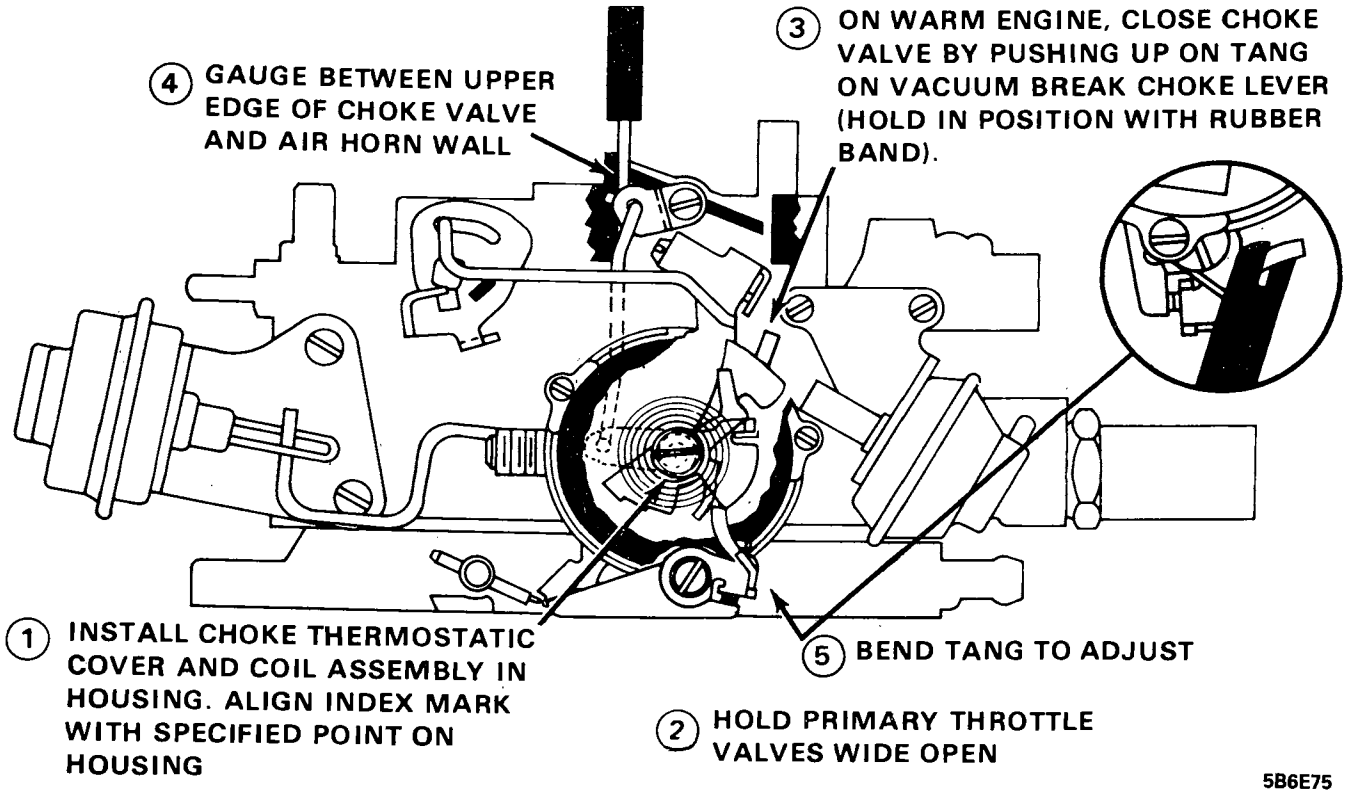


Figure 6E-75 - Unloader Adjustment

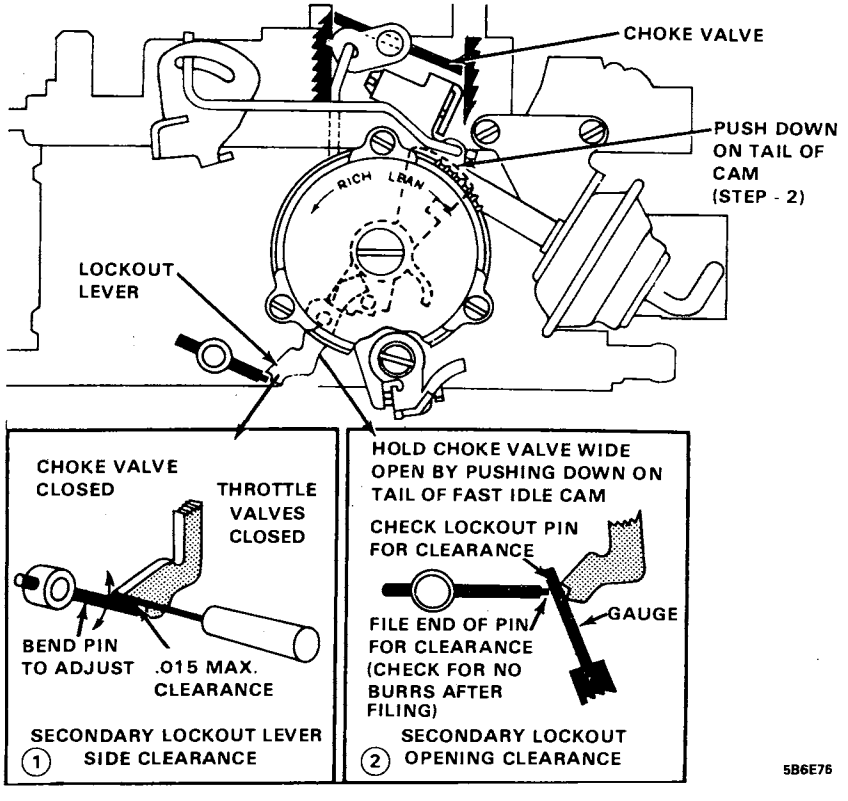


Figure 6E-76 - Secondary Throttle Valve Lock-out Adjustment

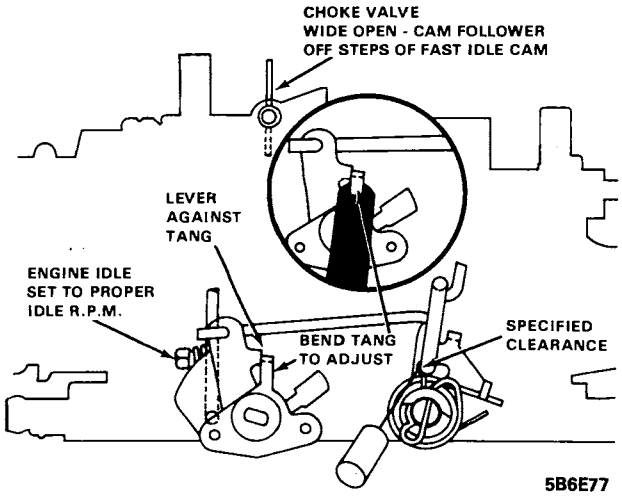


Figure 6E-77 - Secondary Closing Adjustment

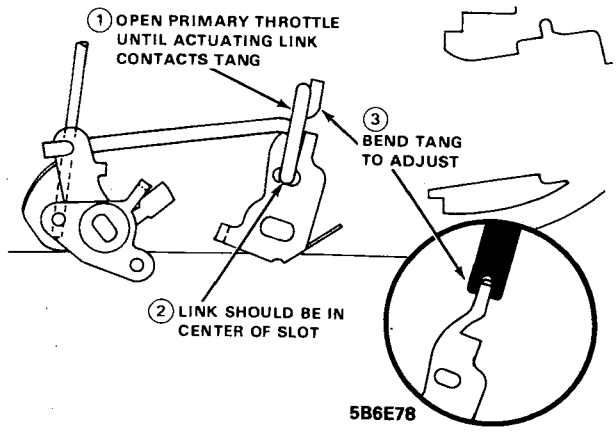


Figure 6E-78 - Secondary Opening Adjustment

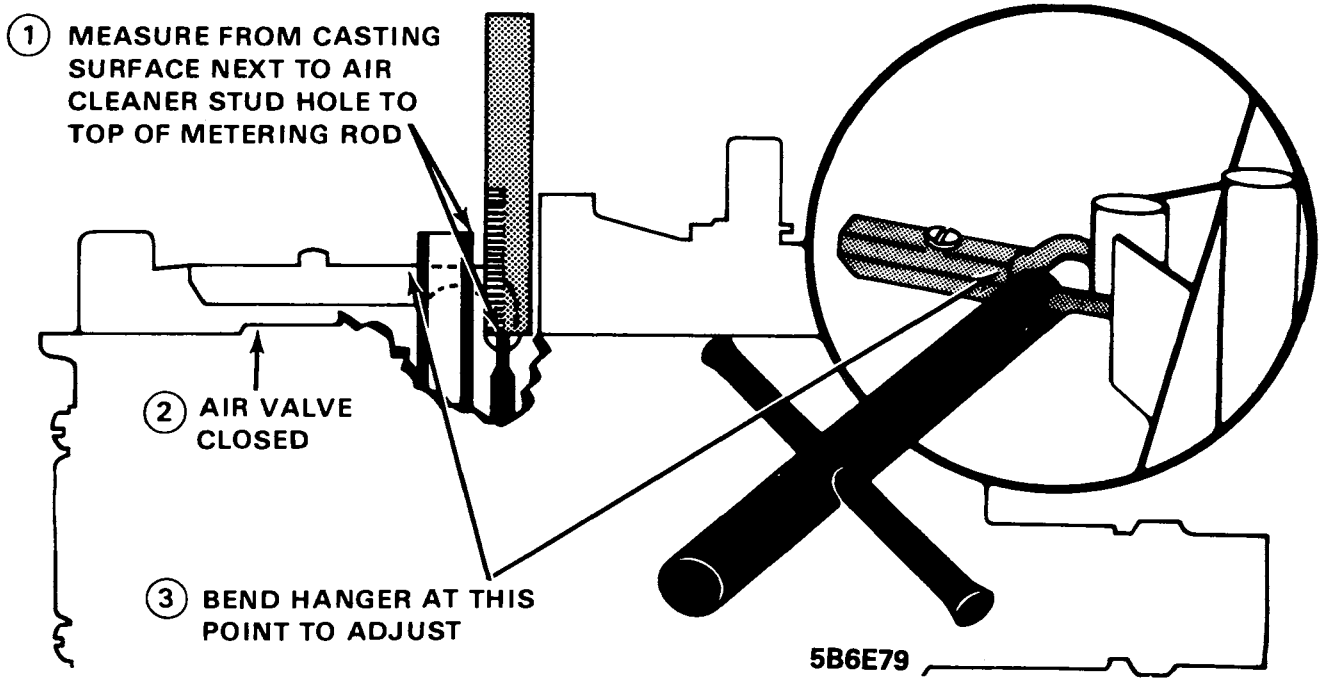


Figure 6E-79 - Secondary Metering Rod Adjustment

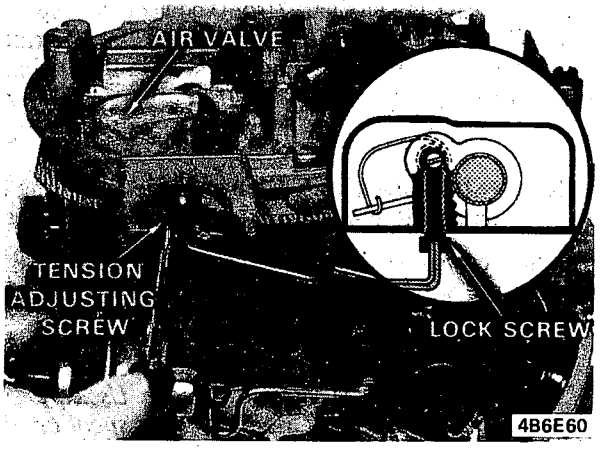


Figure 6E-80 - Air Valve Spring Wind-up Adjustment

MAJOR REPAIR

Before performing any service on the carburetor, it is essential that the carburetor be placed on a holding fixture. Without the use of the holding fixture, it is possible to bend or nick throttle valves.

THROTTLE CLOSING DASHPOT REMOVAL (ON MODELS SO EQUIPPED)

1. Remove screws securing the throttle closing dashpot and bracket to float bowl and remove dashpot and bracket assembly.

CAUTION: *The throttle closing dashpot should not be immersed in any type of carburetor cleaner and should always be removed before complete carburetor overhaul.*

AIR HORN REMOVAL

1. Remove upper choke lever from the end of choke shaft by removing retaining screw. Then rotate upper choke lever to remove choke rod from slot in lever.

2. Remove choke rod from lower lever inside the float bowl casting. Remove rod by holding lower lever outward with small screwdriver and twisting rod counterclockwise.

3. Remove vacuum hose from front vacuum break unit.

4. Remove secondary metering rods by removing the small screw in the top of the metering rod hanger. Lift upward on metering rod hanger until the secondary metering rods are completely out of the air horn. Metering rods may be disassembled from the hanger by rotating ends out of the holes in the end of the hanger.

5. Using a pin punch, drive small roll pin (pump lever pivot pin) inward just enough until pump lever can be removed from air horn. Then remove pump lever from pump rod.

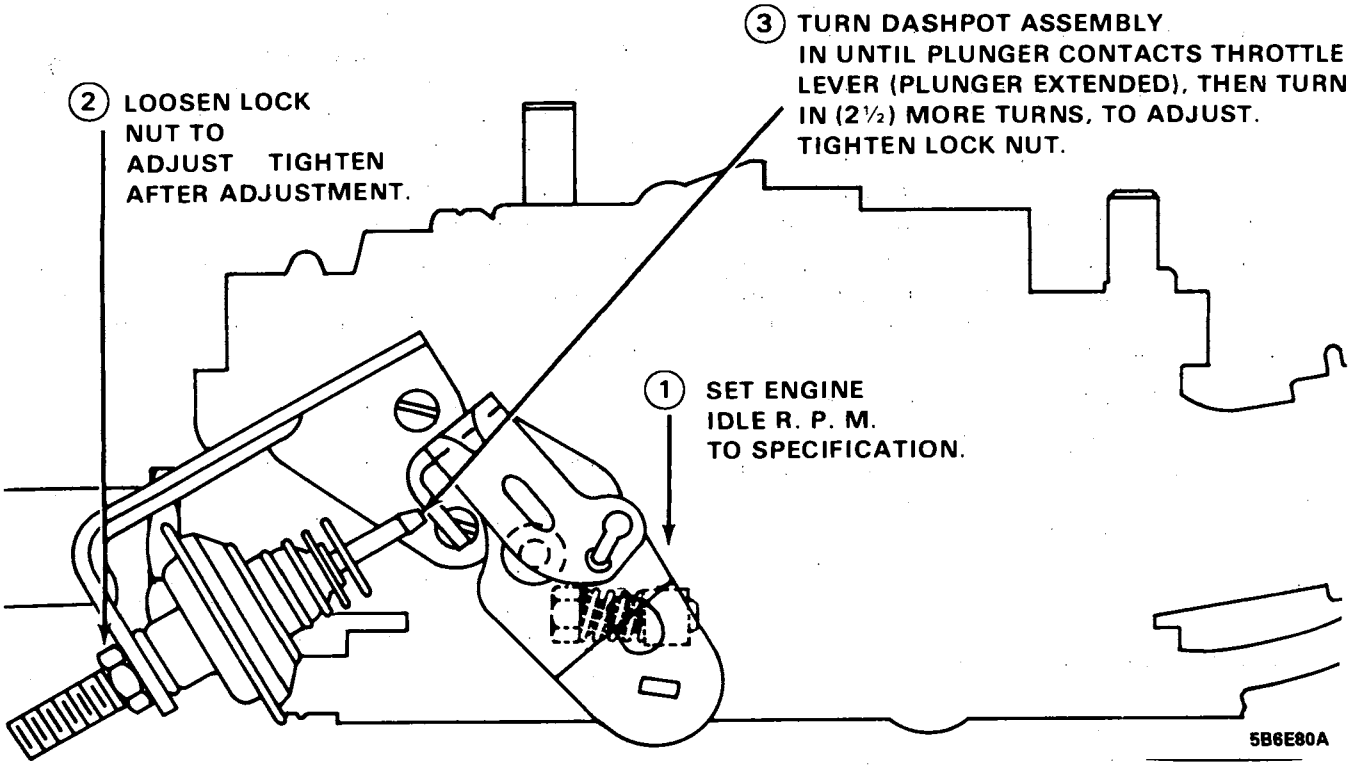


Figure 6E-80A - Throttle Closing Dashpot Adjustment

CAUTION: *Use care in removing small roll pin to prevent damage to pump lever casting bosses in air horn.*

6. Remove nine air-horn to bowl attaching screws; two attaching screws are located next to the venturi. (Two long screws, four short screws, one longer screw in front location, and two countersunk screws.)

7. Remove air horn from float bowl by lifting straight up. The air horn gasket should remain on the float bowl for removal later.

CAUTION: *When removing air horn from float bowl, use care to prevent bending the small tubes protruding from the air horn. These tubes are permanently pressed into the air horn casting. DO NOT REMOVE.*

AIR HORN DISASSEMBLY

1. Remove front vacuum break bracket attaching screws. The diaphragm assembly may now be removed from the air valve dashpot rod and the dashpot rod from the air valve lever.

CAUTION: *Do not place vacuum break assembly in carburetor cleaner.*

Further disassembly of the air horn is not required for cleaning purposes.

FLOAT BOWL DISASSEMBLY

1. Carefully lift one corner of the air horn gasket and remove pump plunger from pump well.

2. Hold auxiliary (front) power piston down and swing hanger toward front of carburetor while at the same time pushing rearward on metering rod compressing spring, until groove in rod aligns with slot in hanger. Then remove rod from hanger and lift rod out of fixed metering jet.

3. Hold main (rear) power piston down and swing auxiliary (front) power piston hanger rearward until it touches the main power piston. Then release main power piston.

4. Remove air horn gasket by lifting out of dowel locating pins and lifting tab of gasket from beneath the main (rear) power piston hanger, being careful not to distort springs holding the main metering rods.

5. Remove pump return spring from pump well.

6. Remove main (rear) power piston and metering rods by depressing piston stem and allowing it to snap free. The power piston can be easily removed ty pressing the piston down and releasing it with a snap. This will cause the power piston spring to snap the piston up against the retainer. This procedure may have to be repeated several times. Remove the power piston spring from the well.

CAUTION: *Do not remove power piston by using pliers on metering rod hanger.*

7. Remove metering rods from main (rear) power piston by disconnecting tension spring from top of each rod, then rotate rod to remove from hanger.

CAUTION: *Use care when disassembling rods to prevent distortion of tension spring and/or metering rods. Note carefully position of tension spring for later-reassembly.*

8. Remove auxiliary (front) power piston by depressing piston stem and allowing it to snap free (following procedure noted in Step 6, above). Remove auxiliary power piston spring from the well.

The main (rear) and auxiliary (front) power piston springs must NOT be interchanged. To prevent mixing of springs, lightly wrap a piece of masking tape around the auxiliary power piston spring for identification.

9. Remove plastic filler block over float valve.

10. Remove float assembly and float needle by pulling up on retaining pin. Remove float needle seat and gasket.

11. Remove two cover screws and carefully lift the A.P.T. metering rod with filler spool, or aneroid, from the float bowl.

CAUTION: *The A.P.T. metering rod with filler spool, or aneroid, is extremely fragile. Use care in handling. Do NOT immerse filler spool or aneroid in carburetor cleaner. The A.P.T. metering rod is pre-set at the factory and NO attempt should ge made to readjust in the field. If replacement is necessary, see A.P.T. Metering Rod Replacement Procedure.*

12. Remove primary main metering jets.

No attempt should be made to remove the auxiliary (front) power piston metering jet, A.P.T. metering jet, or secondary metering plates. These jets are fixed and, if damaged, float bowl replacement is required.

13. Remove pump discharge check ball retainer and check ball.

14. Remove baffle from secondary side of bowl.

15. Remove hose from rear vacuum break control assembly. Remove two screws from rear vacuum break bracket and rotate the assembly to remove vacuum break rod from slot in plunger head.

CAUTION: *Do not place vacuum break assembly in carburetor cleaner.*

16. Remove vacuum break rod by holding down on fast idle cam (hot idle position); move end of vacuum break rod away from float bowl; then disengage rod from hole in intermediate choke lever.

CHOKE DISASSEMBLY

1. Remove three (3) attaching screws and retainers from choke cover and coil assembly. Then pull straight outward and remove cover and coil assembly from choke housing. Remove choke cover gasket. It is not necessary to remove baffle plate from beneath the thermostatic coil. Distortion of the thermostatic coil may result if forced off the center retaining post on the choke cover.

2. Remove choke housing assembly from float bowl by removing retaining screw and washer inside the choke housing. The complete choke assembly can be removed from the float bowl by sliding outward.

3. Remove secondary throttle valve lock-out lever from float bowl.

4. Remove lower choke lever from inside float bowl cavity by inverting bowl.

5. Remove plastic tube seal from choke housing.

CAUTION: *Plastic tube seal should not be immersed in carburetor cleaner.*

6. To disassemble intermediate choke shaft from choke housing, remove coil lever retaining screw at end of shaft inside the choke housing. Then remove thermostatic coil lever from flats on intermediate choke shaft. Remove intermediate choke shaft from the choke housing by sliding outward. The fast idle cam can now be removed from the intermediate choke shaft.

CAUTION: *Remove the cup seal from inside choke housing shaft hole if the housing is to be immersed in carburetor cleaner. Also, remove the cup seal from the float bowl plastic insert for bowl cleaning purposes. DO NOT ATTEMPT TO REMOVE PLASTIC INSERT.*

DISASSEMBLY OF REMAINING FLOAT BOWL PARTS

1. Remove fuel inlet nut, gasket, and filter.

2. Remove throttle body by removing throttle body to bowl attaching screws.

3. Remove throttle body to bowl insulator gasket.

THROTTLE BODY DISASSEMBLY

1. Remove pump rod from throttle lever.

2. DO NOT REMOVE idle mixture limiter caps, unless it is necessary to replace the mixture needles or normal soaking and air pressure fail to clean and idle passages. If the idle mixture needles are removed, adjustment procedures are covered in the Tune-Up Section.

If necessary to remove the idle mixture needle, destroy plastic limiter cap. Do not install a replacement cap as a bare mixture screw is sufficient to indicate that the idle mixture has been readjusted.

CLEANING AND INSPECTION

1. Thoroughly clean carburetor castings and metal parts in an approved carburetor cleaner.

CAUTION: *Rubber parts, plastic parts, pump plungers, filler spools or aneroids, and choke vacuum breaks should not be immersed in carburetor cleaner. However, the throttle valve shafts will withstand normal cleaning in carburetor cleaner.*

2. Blow out all passages in castings with compressed air.

CAUTION: *Do not pass drills through jets or passages.*

3. Examine float needle and seat for wear. Replace, if necessary, with new float needle and seat assembly.

4. Inspect upper and lower surcaces of carburetor castings for damage.

5. Inspect holes in levers for excessive wear or out of round conditions. If worn, leavers should be replaced.

6. Examine fast idle cam for wear or damage.

7. Check air valve for binding conditions. If air valve is damaged, air horn assembly must be replaced.

8. Check all throttle levers and valves for binds or other damage. Replace if necessary.

THROTTLE BODY REASSEMBLY

1. If removed, install idle mixture needles and springs until seated. Back out the needles 2-1/2 turns as a preliminary adjustment. Final adjustment must be made on the engine using the procedures described under the idle mixture adjustment procedure, in the Tune-Up Section.

2. Install lower end of pump rod in throttle lever by aligning tang on rod with slot in lever. End of rod should point outward toward throttle levers.

FLOAT BOWL REASSEMBLY

1. Install new throttle body to bowl gasket over two locating dowels on bowl.

2. Install throttle body making certain throttle body is properly located over dowels on float bowl, then install throttle body to bowl screws and tighten evenly and securely.

3. Place carburetor on proper holding fixture.

4. Install fuel inlet filter spring, filter, new gasket, and inlet nut and tighten nut securely—18 lb. ft.

CAUTION: *Tightening beyond specified torque can damage nylon gasket.*

CHOKE HOUSING ASSEMBLY TO FLOAT BOWL

1. Install new cup seal into plastic insert on side of float bowl for intermediate choke shaft. Lip on cup seal faces outward.

2. Install secondary throttle valve lock-out lever on boss on float bowl with recess in hole in lever facing inward.

3. Install new cup seal into inside choke housing shaft hole. Lips on seal face inward, toward inside of housing.

4. Install fast idle cam onto the intermediate choke shaft (steps on fast idle cam face downward).

5. Carefully install fast idle cam and intermediate choke shaft assembly through seal in choke housing; then install thermostatic coil lever onto flats on intermediate choke shaft. Inside thermostatic choke coil lever is properly aligned when both inside and outside levers face toward fuel inlet. Install inside lever retaining screw into end of intermediate choke shaft. Tighten securely.

6. Install lower choke rod lever into cavity in float bowl. Install plastic tube seal into cavity on choke housing before assembling choke housing to bowl. Install choke housing to bowl sliding intermediate choke shaft into lower choke lever.

7. Install choke housing retaining screw and washer and tighten securely.

The intermediate choke shaft lever and fast idle cam are in correct relation when the tang on lever is beneath the fast idle cam. Do not install choke cover and coil assembly until inside coil lever is adjusted.

COMPLETION OF FLOAT BOWL REASSEMBLY

1. Holding down on fast idle cam (hot idle position), install end of vacuum break rod in hole in intermediate choke lever.

2. Install end of vacuum break rod in slot in rear vacuum break plunger head. Then install rear vacuum break control and bracket assembly to float bowl using two (2) attaching screws. Tighten securely.

Do not attach vacuum break hose until after the vacuum break adjustment is completed.

3. Install air baffle in secondary side of float bowl with notches toward the top. Top edge of baffle must be flush with bowl casting.

4. Install pump discharge check ball and retainer in passage next to pump well. Tighten retainer securely.

5. Install primary main metering jets.

6. Carefully install A.P.T. metering rod and cover assembly into float bowl aligning tab on cover assembly with slot in float bowl closest to fuel inlet nut. Use care installing the A.P.T. metering rod and cover assembly into float bowl to prevent damage to the filler spool, or aneroid, and metering rod tip.

A.P.T. Metering Rod Replacement (Figure 6E-81)

The position of the A.P.T. metering rod with filler spool or aneroid, in the fixed jet is extremely critical. Adjustment should NEVER be attempted unless replacement of the A.P.T. metering rod assembly is required due to damage to the rod and filler spool, or failure of the original aneroid. The threaded A.P.T. metering rod assembly may be replaced as follows:

a. Note position of slot in adjusting screw of metering rod assembly and lightly scribe mark on cover.

b. With cover screws removed, carefully lift the metering rod and cover assembly from the float bowl.

> **CAUTION:** *DO NOT immerse the filler spool or aneroid in carburetor cleaner. The metering rod assembly, with filler spool or aneroid, is extremely fragile. Use care in handling these critical parts.*

c. With metering rod and cover assembly held upright, using a small screwdriver, turn the adjusting screw counterclockwise, carefully counting the number of turns until the threaded metering rod assembly bottoms in the cover. Record number of turns counted for later reference (See Step 6).

d. Remove "E" clip retainer from threaded end of rod. Then using small screwdriver, turn slotted rod clockwise until rod assembly disengages from cover.

Rod assembly in spring loaded. Use care in removing rod assembly from cover.

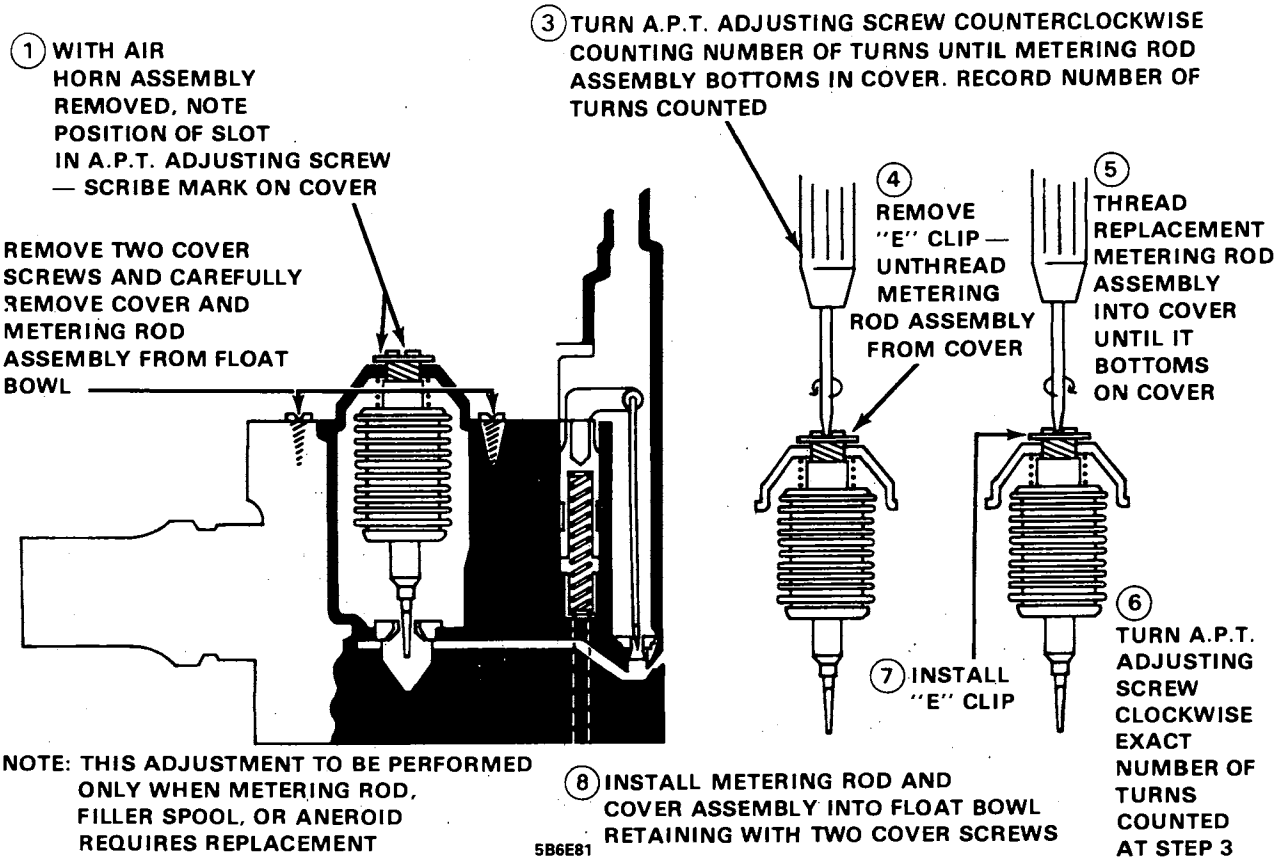


Figure 6E-81 - A.P.T. Metering Rod Replacement

e. Install tension spring on replacement metering rod assembly and thread rod and spring assembly into cover until the rod assembly bottoms in cover.

f. Using a small screwdriver, turn the adjusting screw clockwise until the rod is backed out of the cover exactly the same number of turns from scribe line as recorded during disassembly. (See Step 3.)

When properly adjusted as above, slot in replacement A.P.T. metering rod assembly may not line up with scribe mark on cover.

g. Install "E" clip in groove in rod assembly, making sure clip is locked securely in place.

h. Carefully install cover and metering rod assembly onto float bowl aligning tab on cover assembly with slot in float bowl closest to the fuel inlet nut.

Use care installing the metering rod and cover assembly into float bowl to prevent damaging or bending the metering rod tip.

i. Install cover attaching screws and tighten securely.

7. Install new needle seat assembly, with gasket.

8. To make adjustment easier, bend float arm upward at notch in arm before assembly.

Install float by sliding float lever under pull clip from front to back. With float lever in pull clip, hold float assembly at toe and install retaining pin from pump well side.

CAUTION: *Do not install float needle pull clip into holes in float arm.*

Float Level Adjustment (Figure 6E-82)

9. Float level adjustment.

a. Hold float retainer firmly in place.

b. Push float down lightly against needle.

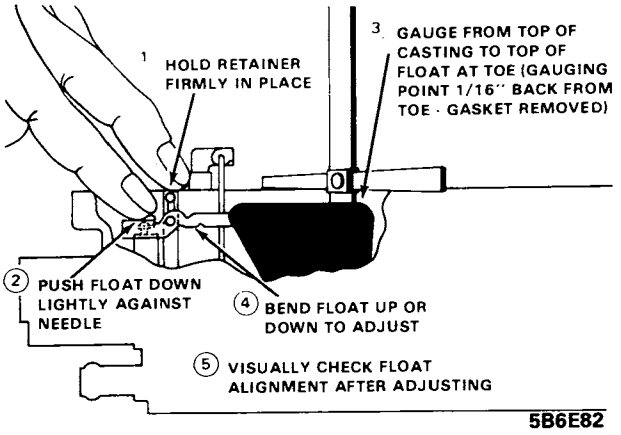


Figure 6E-82 - Float Level Adjustment

c. With adjustable T-scale, gauge from top of float bowl casting (air horn gasket removed) to top of float at toe-gauging point 1/16" back from toe.

d. Bend float arm as necessary for proper adjustment by pushing on pontoon. Refer to adjustment chart for specification.

e. Visually check float alignment after adjustment.

10. Install plastic filler block over float needle, pressing downward until properly seated.

11. Install main power piston spring in power piston well (rear location).

If main metering rods were removed from hanger, reinstall making sure tension spring is connected to top of each rod. Install main power piston assembly in rear well with metering rods properly positioned in metering jets. Press down firmly on plastic power piston retainer to make sure the retainer is seated in recess in bowl and the top is flush with the top of the bowl casting. If necessary, using a drift punch and small hammer, tap retainer lightly in place.

12. Remove masking tape, used for identification, and install auxiliary power piston spring in power piston well (front location).

Install auxiliary power piston assembly in front well. Press down firmly on plastic power piston retainer to make sure the retainer is seated in recess in bowl and the top is flush with the top of the bowl casting. If necessary, using a drift punch and small hammer, tap retainer lightly in place.

13. Install pump return spring in pump well.

14. Hold main (rear) power piston down and swing auxiliary power piston hanger rearward until it touches the main power piston. Then release main power piston.

15. Install air horn gasket by carefully sliding tab of gasket around main metering rods and beneath the main power piston hanger. Position gasket over the two dowel pins on the float bowl.

16. Hold main (rear) power piston hanger down and swing auxiliary power piston toward front of carburetor. Release main power piston.

17. Holding auxiliary power piston down with hanger toward front of carburetor, carefully insert the auxiliary metering rod in the fixed jet. Using finger to compress spring on end of rod, slide rod in groove in hanger and release spring. Correct spring location is on side of hanger facing fuel inlet nut.

AIR HORN REASSEMBLY

1. If removed, install choke shaft, choke valve, and two (2) attaching screws. Tighten screws securely and stake lightly in place.

(NOTE: Check choke valve for freedom of movement and proper alignment before staking screws in place.)

AIR HORN TO BOWL INSTALLATION

1. Holding down on air horn gasket at pump plunger location, carefully lower air horn assembly onto float bowl making sure that the bleed tubes, accelerating well tubes, pull-over enrighment tubes (if used), and pump plunger stem are positioned properly through the holes in the air horn gasket.

CAUTION: *Do not force the air horn assembly onto the bowl but rather lightly lower in place.*

2. Install two long air horn screws, four short screws, and two countersunk screws into primary venturi area.

All air horn screws must be tightened evenly and securely. See Figure 6E-83 for proper tightening sequence.

3. Install vacuum break diaphragm rod into the slot in lever on the end of the air valve shaft. Then install the other end of rod into hole in the front vacuum break diaphragm plunger. Install front vacuum break control and bracket assembly to float bowl using two retaining screws through the bracket. Tighten screws securely.

Do not attach vacuum break hose until vacuum break adjustment is completed.

4. Connect upper end of pump rod to pump lever by placing rod in specified hole in lever. Align hole in pump lever with hole in air horn casting with a suitable screwdriver push pump lever roll pin back through casting until end of pin is flush with casting bosses in air horn.

CAUTION: *Use care installing the small roll pin to prevent damage to pump lever casting bosses.*

5. Intall two secondary metering rods into the secondary metering rod hanger (upper end of rods point toward each other). Install secondary metering rod holder, with rods, onto air valve cam follower. Install retaining screw and tighten securely. Work air valve up and down several times to make sure they are free in all positions.

6. Connect choke rod into lower choke lever inside bowl cavity; then install choke rod into slot in upper choke lever and retain the choke lever to the end of the choke shaft with attaching screw. Tighten securely.

Make sure that the flats on the end of the choke shaft align with flats in the choke lever.

The front and rear vacuum break units, fast idle cam (choke rod), and inside thermostatic choke coil lever must be adjusted properly before installing the choke thermostatic coil and cover assembly and gasket. Refer to the Adjustment Procedures, for adjustment information.

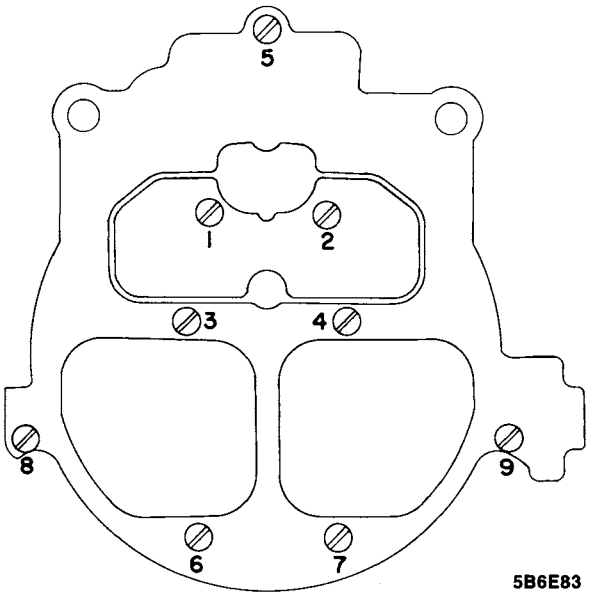


Figure 6E-83 Air Horn Tightening Sequence

7. After the vacuum break, fast idle cam, and inside thermostatic coil lever are adjusted, the thermostatic coil and cover assembly and gasket should be installed and the cover assembly rotated until the choke valve just closes. At this point, the index cover should be adjusted as shown on adjustment chart. (See Automatic Choke Coil Adjustment).

Install three choke cover retainers and screws and tighten securely.

8. If used, position and retain throttle closing dashpot and bracket assembly.

4MC SPECIFICATIONS	455 ENGINE 75 elect ALL B-C-E SERIES NON-CALIF.	455 ENGINE *	455 ENGINE ** ALL B-C-E SERIES CALIFORNIA	350 ENGINE ALL A SERIES EXCEPT CALIFORNIA WAGON AND ALL B SERIES NON CALIFORNIA	350 ENGINE X-SERIES ALL	350 ENGINE A WAGON AND ALL B SERIES CALIF.	400 ENGINE ALL
CARB. NUMBER	7045240	7045548	7045541	7045244	7045246	7045544	7045264
MODEL DESIGNATION	M4MC	M4MCA	M4MCA	M4MC	M4MC	M4MC	M4Mc
NO. OF BARRELS	4	4	4	4	4	4	4
THROTTLE BORE PRIM.	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
THROTTLE BORE SEC.	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4
SMALL VENTURI	9/32	9/32	9/32	9/32	9/32	9/32	9/32
MIDDLE VENTURI	5/8	5/8	5/8	5/8	5/8	5/8	5/8
LARGE VENTURI	1 7/32	1 7/32	1 7/32	1 7/32	1 7/32	1 7/32	1 7/32
METERING ROD (SEC.)	DB	DB	DB	CZ	CZ	CZ	DB
FAST IDLE CAM NO.	17052371	17052371	17052371	17052371	17052371	17052371	7041575
CHOKE COIL NO.	#85	#85	#85	#85	#85	#85	# 85
CHOKE COVER SETTING	1 NOTCH RICH	1 NOTCH RICH	1 NOTCH RICH	1 NOTCH RICH	1 NOTCH RICH	1 NOTCH RICH	INDEX
FLOAT LEVEL	7/16	7/16	7/16	5/16	5/16	5/16	1/2
PUMP ROD LOCATION	INNER HOLE	INNER HOLE	INNER HOLE	OUTER HOLE	OUTER HOLE	OUTER HOLE	INNER HOLE
PUMP ROD ADJ.	9/32	9/32	9/32	15/32	15/32	15/32	9/32
CHOKE ROD ADJ.	.095"	.095"	.095"	.095"	.095"	.095"	.260"
VAC. BR'K ADJ-PRIM.	.135"	.135"	.135"	.130"	.130"	.145"	.150"
VAC. BR'K ADJ-SEC.	.120"	.120"	.120"	.115"	.115"	.130"	.130"
AIR VALVE DASH POT ADJ.	.015"	.015"	.015"	.015"	.015"	.015"	
SEC. OPENING ADJ.	CENTER OF SLOT	CENTER OF SLOT	CENTER OF SLOT	CENTER OF SLOT	CENTER OF SLOT	CENTER OF SLOT	CENTER OF SLOT
SEC. CLOSING ADJ.	.020"	.020"	.020"	.020"	.020"	.020"	.020"
A.V. SPRING ADJ.	7/16 TURN	7/16 TURN	7/16 TURN	3/4 TURN	3/4 TURN	3/4 TURN	1/2 TURN
DASH POT ADJ.			2 1/2			2 1/2"	
CHOKE UNLOADER	.240"	.240"	.240"	.240"	.240"	.240"	.230

5B6E84

* USED ON B WAGON AND ALL C-E SERIES FOR CALIFORNIA AT START OF PRODUCTION.

** USED ON "B" SERIES SEDANS AND COUPES AT START OF PRODUCTION AND ALL B-C-E SERIES AFTER START OF PRODUCTION.

Figure 6E-84 - Specifications

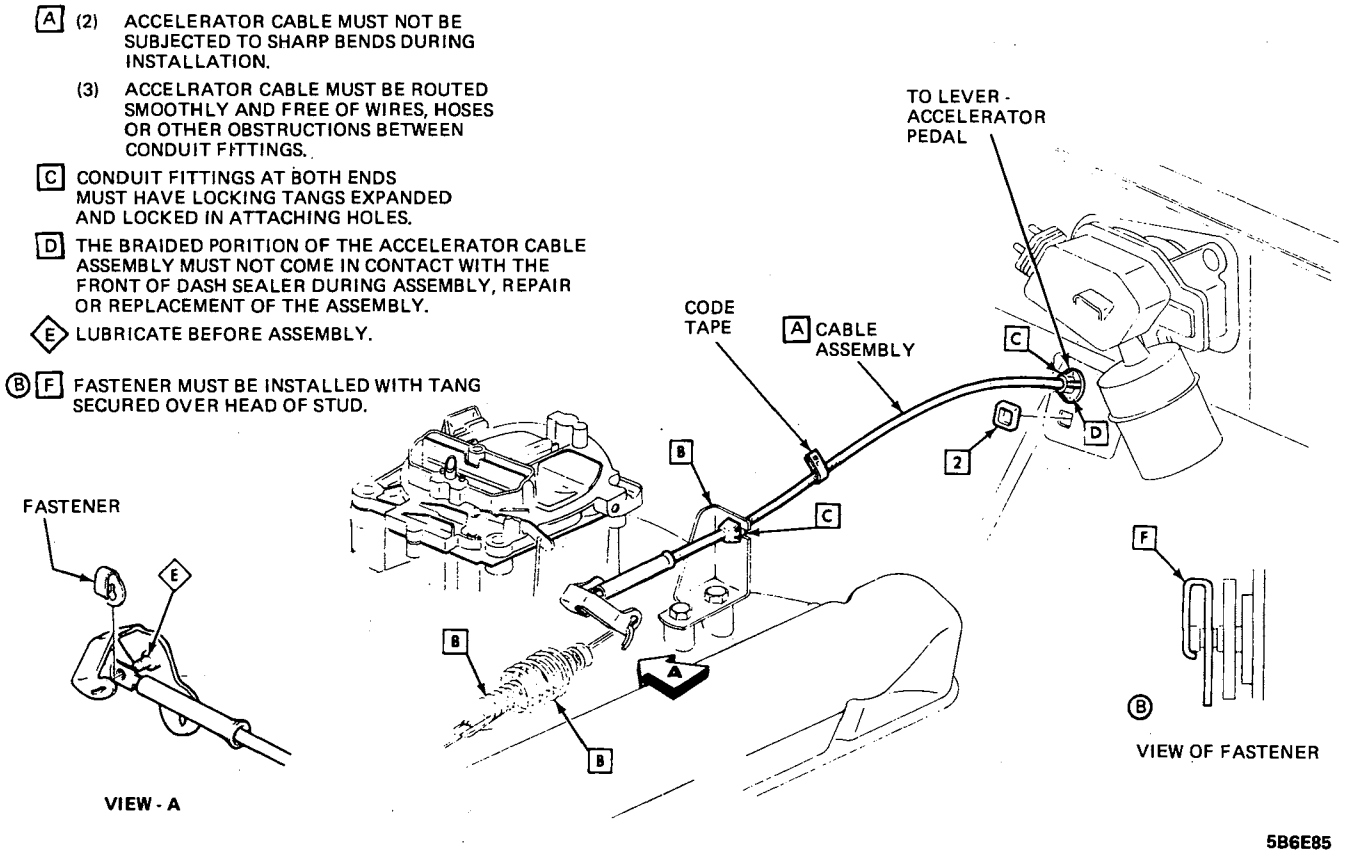


Figure 6E-85 - Accelerator Controls - B-C-E 455