

**SECTION C****ROCHESTER 2GV CARBURETOR****CONTENTS**

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**DIVISION I****TROUBLE DIAGNOSIS****64-13 MODEL 2GV TROUBLE DIAGNOSIS**

Condition	Possible Cause	Correction
Engine Cranks (Turns Over) Will Not Start	1. Improper starting procedure used.	1. Check with the customer to determine if proper starting procedure is used, as outlined in the Owner's Manual. See paragraph 64-15, subparagraph E.

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2. Choke valve not closing.
2. Adjust the choke thermostatic coil. Check the choke valve and/or linkage for binds. Realign the choke valve or linkage as necessary. Replace parts if defective. If caused by dirt and gum, clean with automatic choke cleaner.
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3. No fuel in carburetor.
3. Remove fuel line at carburetor. Connect hose to fuel line and run into metal container. Remove the high tension wire from the coil to distributor and ground. Crank over engine - if there is no fuel discharge from the fuel line, test fuel pump as outlined in the Service Manual. If fuel supply is okay, check the following:
- a) Inspect fuel inlet filter. If plugged, replace.
  - b) 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. See paragraph 64-18, subparagraph C, step 11.
- 

4. 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 the carburetor bores will be very wet.

4. 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. See paragraph 64-15, subparagraph D. If choke unloader is operating properly, 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 fuel system, clean the system and replace fuel filters as necessary. If excessive dirt is found, remove the carburetor unit, disassemble and clean.

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 defective, replace with a factory-matched set.

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.

Check metal float for leakage by shaking. Adjust float. See paragraph 64-18, subparagraph C, step 11.

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### Engine Starts - Will Not Keep Running

1. Engine does not have enough fast idle speed when cold.

1. Check and reset the idle stop screw and fast idle cam. See paragraph 64-15, subparagraph B.

2. Choke vacuum break units are not adjusted to specification or are defective.

2. Adjust both vacuum break assemblies to specification. See paragraph 64-15, subparagraphs C and D. If adjusted okay, check the vacuum break units for proper operation as follows:

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.

Always check the fast idle cam first before adjusting vacuum break units. See paragraph 64-15, subparagraph B.

3. Choke valve and/or sticking or binding.

3. Clean and align linkage, or replace if necessary. Readjust if part replacement is necessary.

4. Insufficient fuel in carburetor.

4. Check fuel pump pressure and volume.

Check for partially-plugged fuel inlet filter. Replace if dirty.

Check the float mechanism for sufficient float drop. Adjust as specified. See paragraph

Engine Idles Rough and/or Stalls

1. Idle speed incorrectly set.

1. Reset idle speed per instructions on decal in engine compartment.

2. Air leaks into carburetor bores beneath throttle valves, manifold leaks, or vacuum hoses disconnected or installed properly.

2. 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 (10-14 ft.lbs., using a pressure oil can, spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, tighten or replace the carburetor or manifold gaskets as necessary.

3. Carburetor flooding.

Check by using procedure outlined under "Engine Flooded".

3. Remove air horn and check float adjustments. See paragraph 64-18, subparagraph C, steps 11 and 12.

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 defective, replace with a factory-matched set.

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.

Check metal float for leakage by shaking.

If excessive dirt is found in the carburetor, clean the fuel system and carburetor. Replace fuel filters as necessary.

Engine Hesitates on Acceleration

1. Accelerator pump not adjusted to specification.

1. Adjust accelerator pump. See paragraph 64-15, subparagraph A.

Engine hesitation can be caused by many different engine problems. Before checking the car-

2. Defective accelerator pump system.

2. Remove air horn and check pump cup. If cracked, scored or distorted, replace the pump plunger.

A quick check of the

Check the pump inlet and discharge

buretor, make sure the engine has been thoroughly tuned. This should include a complete fuel pump and electrical check.

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.

balls for proper seating and location.

The pump discharge ball is 3/16" steel and is located beneath the venturi cluster assembly. 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 check ball if leaking. The pump inlet ball is the small aluminum ball located in the bottom of the pump well.

3. Dirt in pump passages.

3. Clean and blow out with compressed air.

4. Float level too low.

4. Check and reset float level to specification. See paragraph 64-18, subparagraph C, step 11.

No Power on Heavy Acceleration or at High Speed

1. Carburetor throttle valves not going wide open. Check by pushing accelerator pedal to floor.

1. Adjust throttle linkage to obtain wide open throttle in carburetor.

2. Dirty or plugged fuel inlet filter.

2. Replace with a new filter element.

3. Power system not operating.

3. Remove the carburetor air horn and check the 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.

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.

4. Float level too low.

4. Check and reset float level to specification. See paragraph 64-18, subparagraph C, step 11.

5. Float not dropping far enough into float bowl.

5. Check and adjust float drop as specified. See paragraph 64-18, subparagraph C, step 12.

6. Main metering jets or venturi cluster dirty, plugged or incorrect

6. If the main metering jets are plugged or dirty and excessive dirt is in the fuel bowl, the

part.

carburetor should be completely disassembled and cleaned.

If the jets are incorrect size, 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

This can be caused by many other items than carburetor, so a complete ignition and fuel pump check should be made before proceeding with carburetor items.

1. Choke valve not opening completely when engine is warm.

1. Check for binding choke valve and/or linkage. Clean and/or replace as necessary.

Check and adjust choke thermostatic coil. See paragraph 64-15, subparagraph E.

2. Engine flooded.

2. See procedure under "Engine Cranks, Will Not Start - Engine Flooded".

3. No fuel in carburetor.

3. Check fuel pump. Run pressure and volume test.

Check fuel by-pass line for restriction. Pinch off by-pass line to prime fuel pump.

Check float needle for sticking in seat or binding float.

4. Leaking float bowl.

4. Fill bowl with fuel and look for leaks.

### Poor 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. Engine needs complete tune-up.

2. Check engine compression, examine spark plugs (if dirty or improperly gapped, clean and regap or replace), ignition point dwell, condition, readjust ignition points, if necessary, and 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.

3. Choke valve not fully opening.

3. Clean choke and free up linkage. Check choke coil for proper adjustment. Reset to specification. See paragraph 64-15, sub-

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 paragraph E.
 

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| 4. Fuel leaks.   | 4. Check fuel tank, fuel lines and fuel pump for any fuel leakage.   |
| 5. High fuel level in carburetor.  | 5. Check for dirt in the needle and seat. Test, using suction by mouth or needle seat tester. Check for loaded or leaking float. Reset carburetor float to specification. See paragraph 64-18, subparagraph C, steps 11 and 12. If excessive dirt is present in the carburetor bowl, the carburetor should be cleaned.   |
| 6. Power system in carburetor not functioning properly - power piston sticking or power valve leaking or stuck open. | 6. Free up or replace, as necessary.   |
| 7. Incorrect main metering jets installed.   | 7. Consult parts list for proper jet. The last two digits of the part number appear on the jet face.   |
| 8. Fuel being pulled from accelerator system into venturi through pump jets.   | 8. 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. |
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## DIVISION II

### DESCRIPTION AND OPERATION

#### 64-14 DESCRIPTION AND OPERATION OF ROCHESTER 2-BARREL CARBURETOR

##### A. General Description

The 1972 Model 2GV for Buick is similar in operation to the 1971 models, except as follows:

1. The fuel vapor collection canister purge system will be removed from the carburetor throttle body. The vapor canister will be purged through a line which will lead to the air cleaner snorkel.

2. The main metering system will have the pullover enrichment feature which will be used on all models for 1972.

3. An exhaust gas recirculation system (EGR) will be used on all California applications and manual transmissions to control oxides of nitrogen. The vacuum supply necessary to operate the recirculation valve is located in the throttle body and connects through a channel to a tube which is located just beneath the spark vacuum tube in the float bowl. See Idle System for port location.

4. The throttle lever has been redesigned to accommodate the use of an idle control solenoid which is used to control engine idle speed and prevent engine dieseling.

5. A 15 degree idle mixture needle will be incorporated



to provide efficient mixture control at idle. The idle mixture will be pre-set at the factory and capped with plastic limiter caps to prevent readjustment in the field.

6. A new fast idle cam is incorporated which has revised steps to improve cold driveaway.

The Rochester Model 2GV carburetor is of the side bowl design. While not interchangeable, the carburetors used on automatic and standard transmission cars are basically the same, and the description and service operations are identical. The only difference is in some of the internal calibrations. The carburetor float bowl is located forward of the main bores of the carburetor. The carburetor is compact in design in that all of the fuel metering is centrally located. See Figure 64-12.

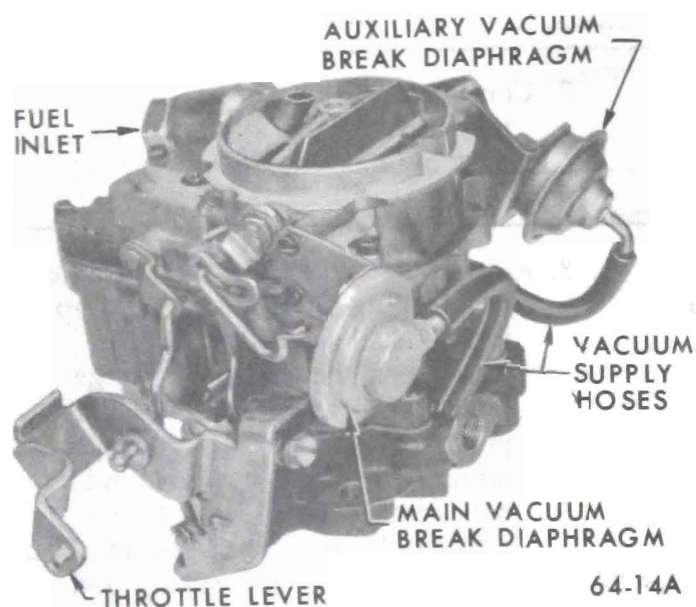


Figure 64-12 - Rochester 2GV Carburetor Assembly

This carburetor uses a calibrated cluster design, which places in a removable assembly, the main well tubes, idle tubes, mixture passages, air bleeds and pump jets. This cluster can easily be removed for cleaning and inspection purposes. The venturi cluster fits on a flat portion of the carburetor bowl in front of the main venturi with a gasket underneath. The idle and main well tubes are permanently installed in the cluster body by means of a precision pressed fit and, therefore, cannot be serviced separately. The main nozzles and idle tubes are suspended in the fuel in the main wells of the float bowl. Removable plastic main well inserts surround the main fuel nozzles to insulate the nozzles, to prevent fuel percolation, and provide smooth fuel flow through the main metering system during hot engine operation.

The main metering jets are of the fixed type. Metering calibration is accomplished through a system of calibrated air bleeds which give the correct air/fuel

mixtures throughout all operational ranges. Flat metal inserts have been added inside the main well tubes (discharge nozzles) to provide even fuel flow and break up vapor bubbles during hot operation.

The Rochester Model 2GV carburetor employs the use of a vacuum-operated power system for extra power when needed. Power mixtures are regulated by drop in engine manifold vacuum regardless of the degree of throttle opening.

Thereby, additional fuel can be supplied for power mixtures according to the engine demands.

The carburetor is internally vented through a large tube which leads from beneath the air cleaner inside the air horn bore to the fuel in the float bowl. No external venting is used in order to meet evaporative loss emissions.

In that the fuel tank will not be vented to atmosphere, all fuel vapors are collected in a vapor collection canister. Purge ports for the canister are provided in the carburetor air cleaner snorkel. They consist of a variable purge plus a constant bleed purge, operation of which will be described under "Idle System".

The idle mixture needles will be restricted in adjustment by plastic limiter caps. The idle mixture will be pre-set at the factory, and any tailoring on the engine will be done within the rotation of the cap limiter tabs.

The carburetor part number is stamped on a flat section of the float bowl just beneath the fuel inlet nut. 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.

Adjustments have been made as simple as possible. They consist of idle, float level, float drop, pump, choke, choke rod, choke unloader, pump rod, choke coil rod, vacuum break adjustments.

Incorporated in the Rochester Model 2GV carburetor are six basic systems. They are Float, Low Speed, Main Metering, Power, Accelerating and Choke systems. The following explanation and illustrations show that each system operates to provide efficient carburetion through all operating conditions.

### B. Operation of Float System

The float system controls the level of the fuel in the carburetor fuel bowl. Fuel level is very important because it must be maintained to give proper metering through all operating ranges.

Fuel entering the carburetor must first pass through the inlet filter, by the inlet needle seat, then past the



float needle, into the float bowl; flow continues until the fuel level raises the float to a position where it closes the float valve. As fuel is used from the carburetor bowl the float drops, moving the float needle off its seat and replenishing the fuel in the bowl, thereby keeping the fuel level constant. See Figure 64-13.

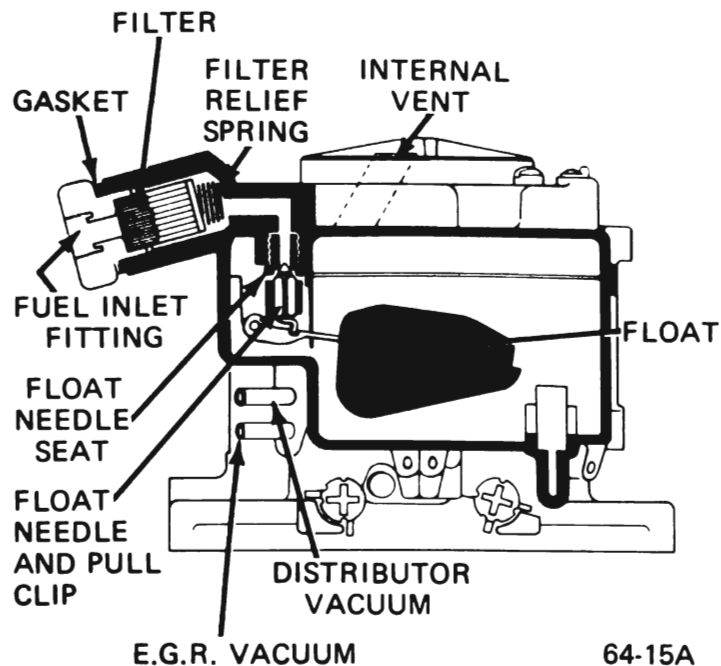


Figure 64-13 - Float System

A float tang located at the rear of the float arm between the float hangers prevents the float assembly from moving too far downward, but allows the float assembly to move down far enough for maximum fuel flow into the carburetor bowl. A float needle pull clip connecting the float arm to the needle valve keeps the needle from sticking closed in the seat, which may be caused by dirt or gum formation.

The fuel bowl is internally vented by a tube which leads from inside the air horn bore to the top of the fuel in the float bowl. The carburetor is internally balanced through the internal vent because the same pressure causing air to flow will be acting upon the top of the fuel in the float bowl, causing fuel to flow.

### C. Operation of Idle (Low Speed) System

During engine idle operation, air flow through the carburetor venturi is very low and is not great enough to cause fuel to flow from the main discharge nozzles. Therefore, 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 adjustments, off-idle discharge ports and idle needle discharge holes.

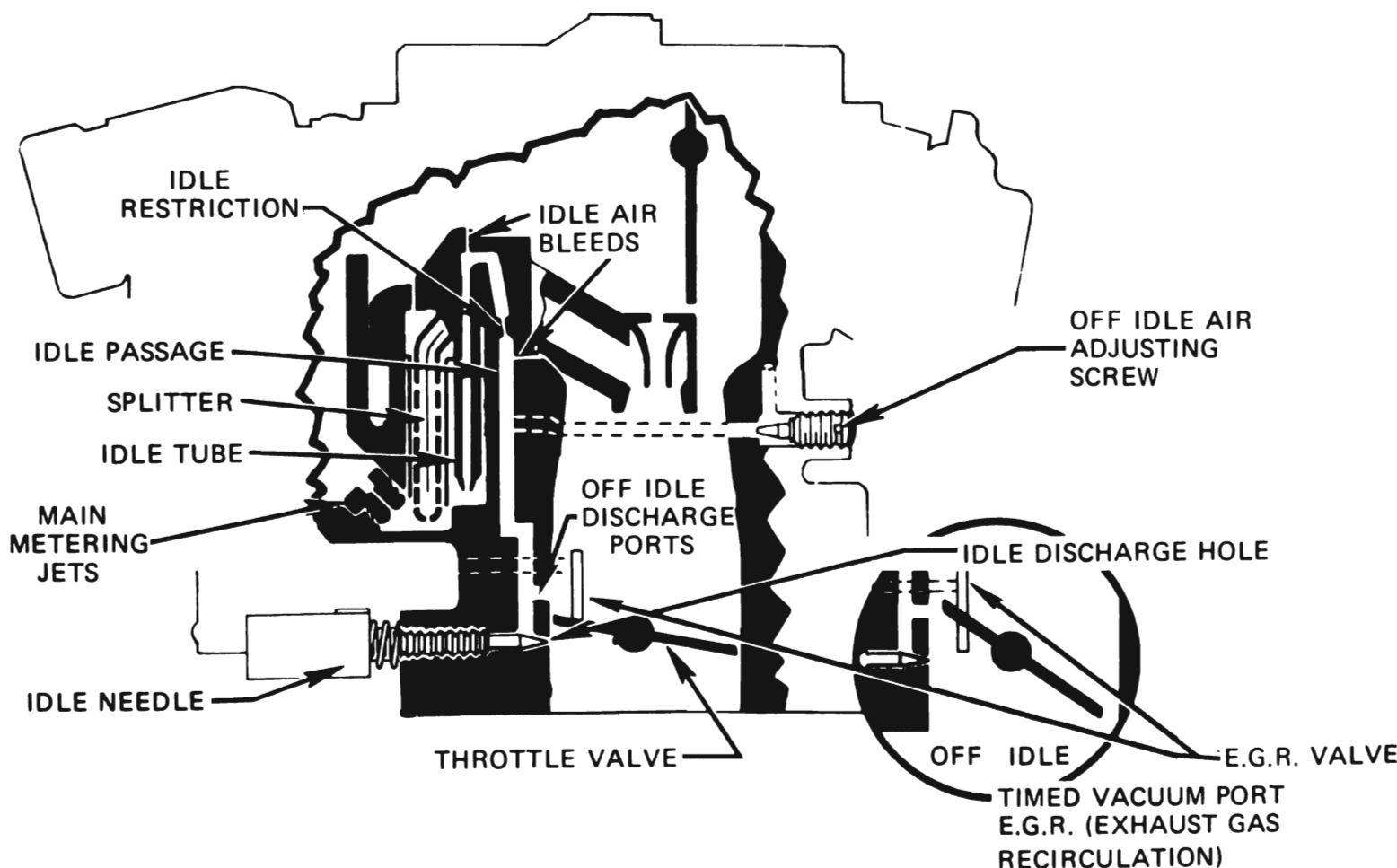


Figure 64-14 - Idle (Low Speed) System

At idle speed the throttle valves are held slightly open, allowing a small amount of air to pass between the wall of the carburetor bore and the edge of the throttle valves. Since there is not enough air flow for efficient venturi action, the fuel is made to flow by the application of vacuum (low pressure) directly through the idle system to the fuel in the carburetor float bowl. See Figure 64-14.

Fuel from the float bowl passes through each main metering jet into the main fuel well where it is metered by the orifice at the lower tip of the idle tubes. It then passes up the idle tubes and is mixed with air at the top of the idle tube by a calibrated idle air bleed located in the top of the cluster casting. The air/fuel mixture then passes down through calibrated restrictions into a vertical passage and then past a second idle air bleed located just below the channel restriction. It then moves down past the off-idle discharge port located just above the nearly-closed throttle valve where it is again bled with air. It then moves down to the idle mixture needle hole where it combines with air by-passing the slightly-open throttle valve. The idle mixture needle controls the amount of fuel mixture which enters the carburetor bore during curb idle of the engine. The idle mixture will be pre-set at the factory and plastic limiter caps installed. The idle mixture limiter caps should not be removed, except if necessary for cleaning or overhaul of the carburetor. New (red) plastic limiter caps are provided in the overhaul kit. The original limiter caps should be destroyed and the red caps installed in their place after cleaning or overhaul.

As the throttle valve is opened further, the off-idle discharge port is exposed to manifold vacuum. This port supplies additional fuel mixture for off-idle engine requirements. Improved fuel control is achieved by an off-idle air adjustment which is made at the factory. The adjusting screw is sealed at the factory, because this adjustment cannot be made in the field.

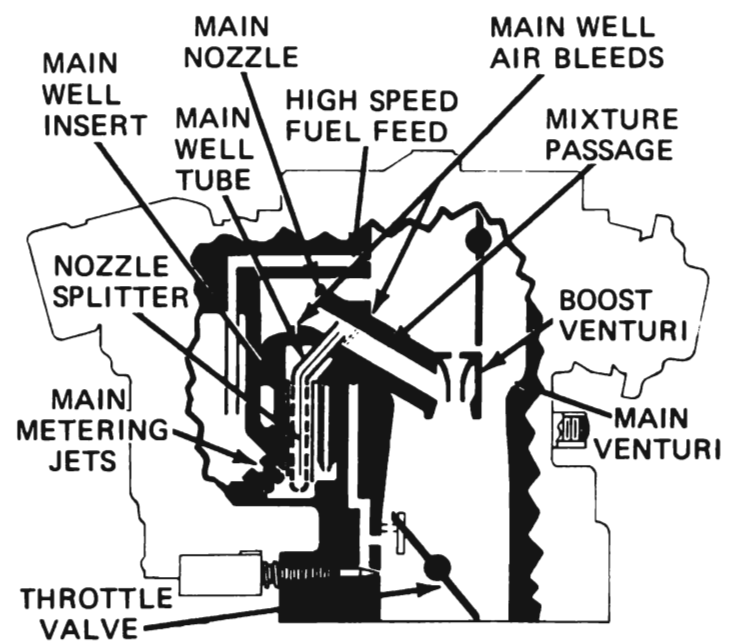
An exhaust gas recirculation (EGR) system is used on all California and manual transmission models for 1972 to control the oxides of nitrogen. The EGR valve is operated by a vacuum signal taken from the carburetor. A vacuum supply tube, installed in the carburetor throttle body, connects to a timed vertical port in throttle body bore. This provides a vacuum signal to the EGR valve in the off-idle and part throttle ranges of the carburetor. The purpose of the EGR system is to lower combustion temperatures and reduce oxides of nitrogen during these ranges of engine operation.

#### D. Operation of Main Metering (High-Speed) System

As the throttle valves are opened beyond the off-idle position and the engine demands more air and fuel, the throttle valves move gradually away from the wall of the carburetor bore, reducing the vacuum so that the discharge of fuel mixture at the idle mixture needle holes and off-idle port gradually diminishes.

With the increased throttle opening, there is increased velocity in the venturi system. This causes a drop in pressure in the large venturi which is increased many times in the small venturi. Since the low pressure (high vacuum) is now in the small venturi, fuel will flow in the following manner:

Fuel from the float bowl passes through the main metering jets into the main well and rises in the main well tubes. Plastic main well inserts are used in the main wells to provide smooth fuel flow for more efficient metering. This results in improved fuel control in the off-idle transfer and part throttle range. Air entering the main well 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 nozzle into a mixture (high speed) passage where more air is added. The mixture then travels down to the mixture passage to the small venturi where it is delivered to the air stream and then to the intake manifold. See Figure 64-15.



64-17B

Figure 64-15 - Main Metering (High-Speed) System

An additional fuel circuit has been provided which supplements the main metering system of the carburetor unit. The purpose of the fuel enrichment system is to provide additional enrichment to the part throttle system at higher air flows. To accomplish this, 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. At approximately 8 lbs. of air per minute and above the fuel begins to feed from these discharge ports to supplement the main metering system. See Figure 64-15.

### E. Operation of Power System

To achieve the proper mixtures required when more power is desired or for extreme high speed driving, a vacuum operated power piston in the air horn and a power valve located in the bottom of the float bowl are used. Through a connecting vacuum passage from the base of the carburetor to the power piston cylinder in the air horn, the power piston is exposed to manifold vacuum at all times. See Figure 64-16.

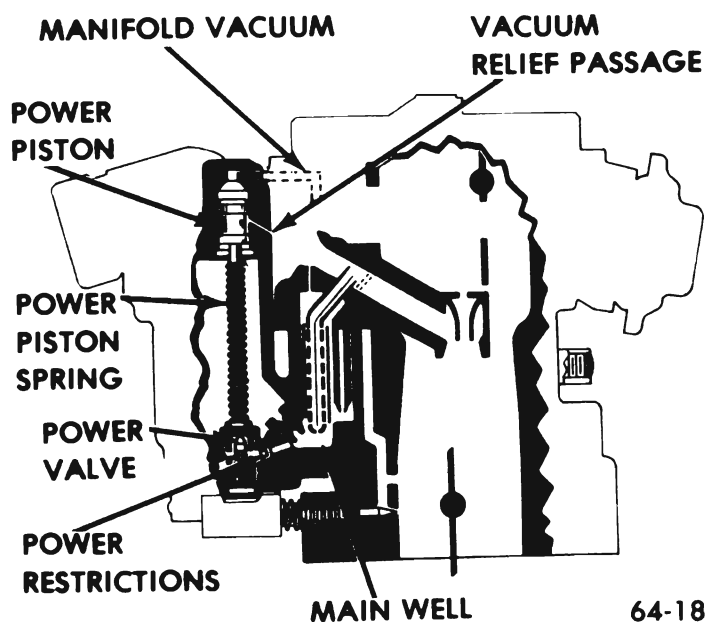


Figure 64-16 Power System

During idle and part throttle operation, the relatively high vacuum holds the power piston up against spring tension and the power valve remains closed.

Increase in engine load lowers the manifold vacuum. When it has dropped sufficiently, the power piston spring overcomes the upward vacuum pull and the power piston moves downward, opening the power valve to allow additional fuel to flow through calibrated restrictions into the main well.

As the engine load decreases, the resulting higher vacuum overcomes the spring tension on the power piston, and raises the power piston closing the power valve.

A two-stage power valve is used. In the first stage, fuel is metered by the valve itself. This stage is used for

light power loads. On heavy power loads the valve is fully opened to the second stage, and in this location the power valve allows the fuel to be metered by the power restriction in the fuel channel located in the bottom of the fuel bowl.

It will be noted that the power piston cavity in the carburetor air horn is connected to the main air flow passage by a vacuum relief passage. It is the purpose of this passage to prevent the transfer of vacuum acting on the piston from acting also on the top of the fuel in the float bowl. Any leakage of air past the upper grooves of the piston will be compensated for by this relief passage and will not affect carburetor metering.

### F. Operation of Accelerating System

When the throttle valve is opened rapidly, air flow and manifold vacuum change almost instantaneously, while the heavier fuel tends to lag behind causing a momentary leanness. The accelerator pump 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 ball check on the intake stroke of the pump plunger (upward stroke). See Figure 64-17.

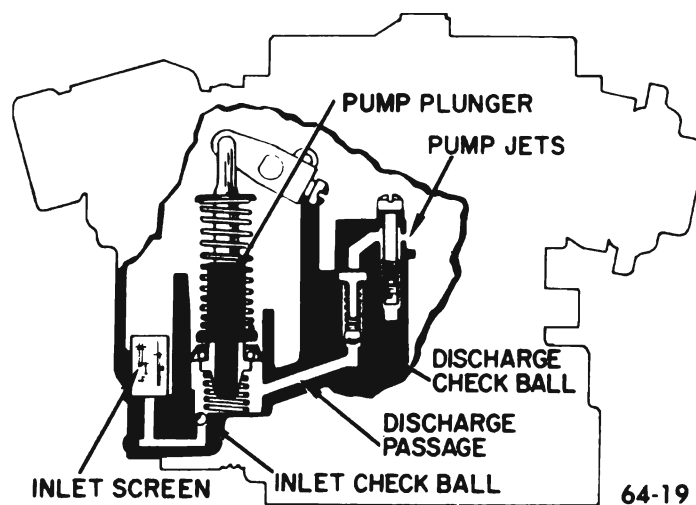


Figure 64-17 - Accelerating Pump System

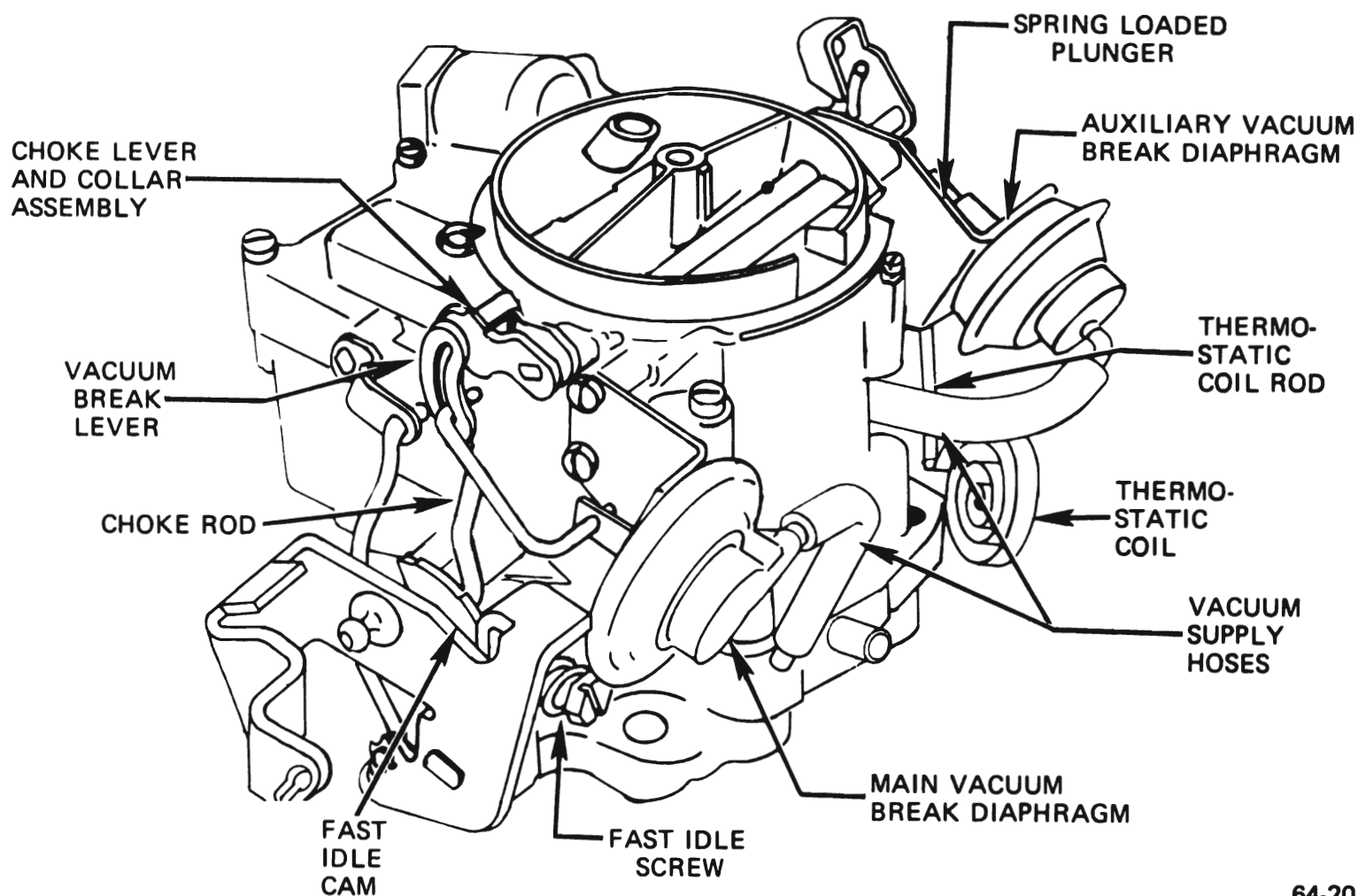
Downward motion of the pump plunger seats the inlet ball check and forces the fuel through the discharge passage where it unseats the pump discharge ball and then passes on through to the pump jets where it sprays into the venturi.

The expander spring located behind the pump cup insures good contact between the lip of the pump cup and the pump well at all times. When the pump is not in operation, the pump cup unseats from the plunger head and acts as a vent for the pump well. If vapors form in the pump well during hot operation, they are vented between the head and pump cup out into the float bowl. Without this vent, vapor pressure in the pump well might force fuel from the pump system into the engine manifold causing hard starting when the engine is hot.

The pump discharge ball check in the accelerator pump passage prevents any pullover or discharge of fuel from the pump nozzles when the accelerator pump is inoperative.

### G. Operation of Choke System

The Model 2GV choke system consists of a choke valve located in the carburetor air horn, two vacuum break diaphragm units, fast idle cam, choke linkage and a thermostatic coil which is located on the engine manifold. See Figure 64-18.



64-20A

Figure 64-18 - Choke System

The thermostatic coil is connected to the choke valve by a rod. The choke operation is controlled by a combination of intake manifold vacuum, the off-set choke valve, and temperature.

The thermostatic coil located on the engine manifold is calibrated to hold the choke valve closed when the engine is cold. While starting the engine, air velocity against the off-set choke valve causes the valve to open slightly, against the torque of the thermostatic coil. When the engine starts, manifold vacuum increases. Two vacuum break diaphragm units connected by linkage to the choke valve shaft, open the choke valve

a pre-determined amount against choke coil tension, so that the fuel mixture will be lean enough and the engine will run without stalling.

Two vacuum break diaphragm units are used for refined fuel mixture blending during this period. The primary or main vacuum break diaphragm opens the choke valve to a point where the engine will run without loading or stalling. As the engine manifold is wetted and friction in the engine decreases, the secondary or auxiliary vacuum break unit which has a delayed action, gradually opens the choke valve a little further to prevent loading and reduce exhaust

emissions. The primary (main) vacuum break unit located on the throttle lever side operates the same as on previous units. The secondary or auxiliary vacuum break unit located at the opposite end of the choke shaft has a delayed action created by an internal check valve which has a very small bleed orifice. This delays the movement of the vacuum diaphragm a few seconds until the engine will run at slightly leaner mixtures.

The auxiliary vacuum break unit has a spring loaded plunger. The purpose of the spring loaded plunger is to off-set choke thermostatic coil tension to provide leaner mixtures during warm-up for reduced exhaust emissions.

As the engine continues to warm up, the choke coil continues to relax its tension until the choke valve is fully opened and the engine can now run at normal fuel mixtures.

To provide correct engine speeds during warm up, a fast idle cam is used to run the engine at slightly higher speeds than idle to prevent stalling. This is accomplished by graduated steps on the fast idle cam. During engine starting, the fast idle speed screw is on the highest step of the cam which holds the throttle valve open further than at normal idle. As the engine warms up and the choke valve begins to move open, the fast idle speed screw drops to lower steps on the cam and gradually lowers engine speed until the engine is thoroughly warm, at which point the engine will run at normal idle speed. The fast idle cam follows rotation of the choke valve. When the choke valve is fully open, the fast idle cam drops so that the fast idle screw no longer comes in contact with the fast idle cam. At this point, the engine idle is controlled by the idle stop solenoid.

A mechanical choke unloader is provided to allow the driver to open the choke valve mechanically during the cold starting period, should the engine become flooded. When the accelerator pedal is depressed, a tang on the throttle lever pushes on the tail of the fast idle cam and forces the choke valve slightly open to allow extra air into the engine to lean the fuel mixtures so the engine will start.

## DIVISION III

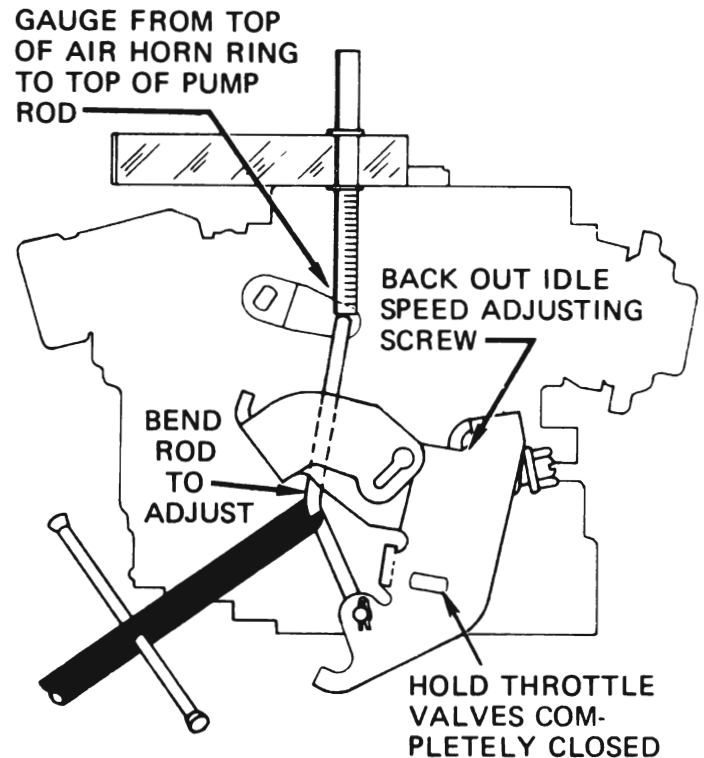
### ADJUSTMENTS AND MINOR SERVICE

#### 64-15 EXTERNAL ADJUSTMENT OF ROCHESTER 2GV CARBURETOR

All adjustments on the carburetor, except for float adjustments, are made externally. For float level and drop adjustments, see paragraph 64-18, steps 11 and 12.

#### A. Pump Rod Adjustment

Back out the fast idle stop screw and completely close throttle valves in bore. Place pump gauge across top of carburetor air horn ring, as shown, 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 at the specified dimension. Bend the pump rod as required to obtain the specified setting using Tool J-4552. See Figure 64-19.



64-21A

Figure 64-19 - Pump Rod Adjustment

#### B. Fast Idle Cam Adjustment

Place the fast idle speed adjusting screw in its normal position, which is approximately 1 to 1-1/2 turns in after contact with the lowest step of the fast idle cam. After initial fast idle screw adjustment, place the screw on the second step of the fast idle cam against the shoulder of the high step, as shown. With the choke valve held towards the closed position, measure the distance between the upper edge of the choke valve and the inside air horn wall with the specified plug gauge. Bend the tang on the choke lever, as shown, to adjust. See Figure 64-20.

#### C. Primary Vacuum Break Adjustment

Seat primary vacuum break diaphragm plunger with Special Tool J-23417, Carburetor Vacuum Break

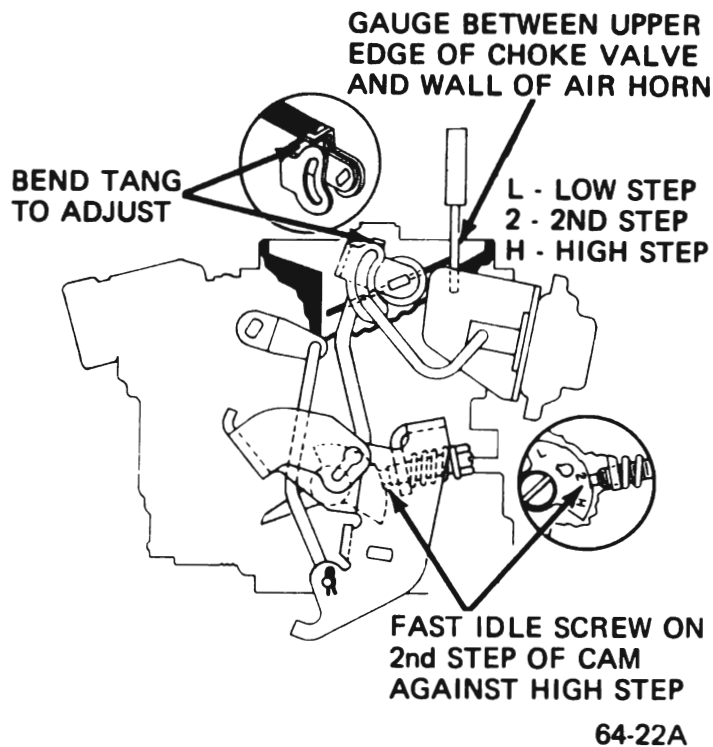


Figure 64-20 - Fast Idle Cam Adjustment

Actuator. Rotate choke valve towards the closed position so that the vacuum break rod is at the bottom of the slot in the choke shaft lever, place the proper gauge between the upper edge of the choke valve and inside wall of the air horn bore. To adjust, bend the vacuum break rod so that the gauge will just fit between the edge of valve and bore. See Figure 64-21.

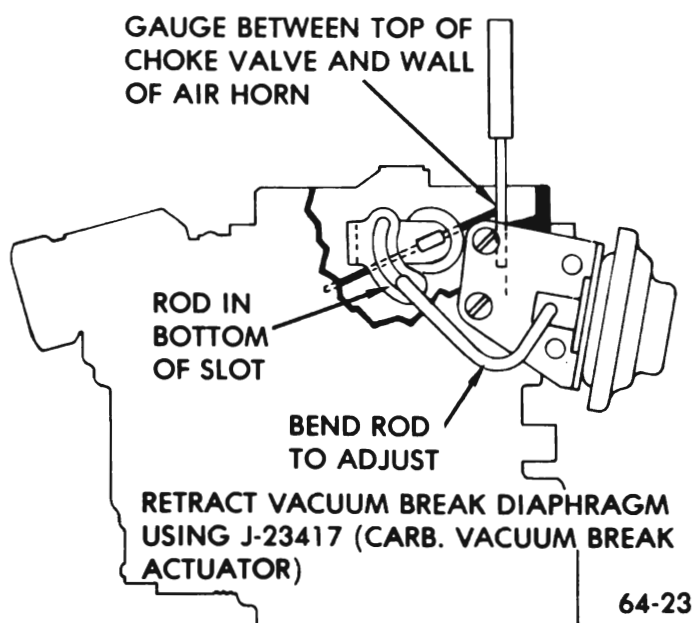


Figure 64-21 - Primary Vacuum Break Adjustment

#### D. Secondary Vacuum Break Adjustment

Fully seat the secondary vacuum break diaphragm plunger using J-23417, Carburetor Vacuum Break Actuator. It will take approximately eight seconds for diaphragm to retract. With the secondary vacuum break diaphragm in the fully seated position, push the choke valve towards the closed position until the spring loaded diaphragm plunger is fully extended. With the choke valve held in this position, measure the distance between the upper edge of choke valve and inside air horn wall. Dimension should be as specified, if not, bend the vacuum break link at the point shown to adjust. See Figure 64-22. Care should be used when compressing the diaphragm plunger spring so that the force used in closing the choke valve does not pull the vacuum diaphragm off its seat.

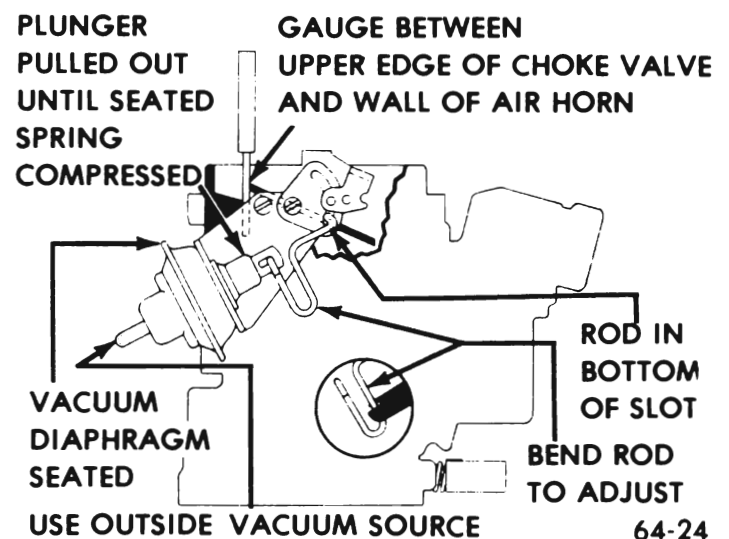


Figure 64-22 - Secondary Vacuum Break Adjustment

#### E. Choke Unloader Adjustment

With the throttle valves held wide open, choke valve should be opened enough to admit end of gauge between upper edge of choke valve and inner air horn wall. Bend unloader tang on the throttle lever to obtain the correct measurement. See Figure 64-23. It is advisable to check the choke unloader by depressing the accelerator pedal to insure full throttle valve opening of the carburetor.

#### F. Choke Coil Rod Adjustment

To adjust, remove clip and disconnect the upper end of choke coil rod from the choke lever. With the choke valve completely closed, pull upward on the choke coil rod to the limit of its travel. The end of the rod should fit into the gauge notch in lever. To adjust, bend the rod as shown. See Figure 64-24. After adjustment is complete, install the rod end in the lever hole and install retaining clip.



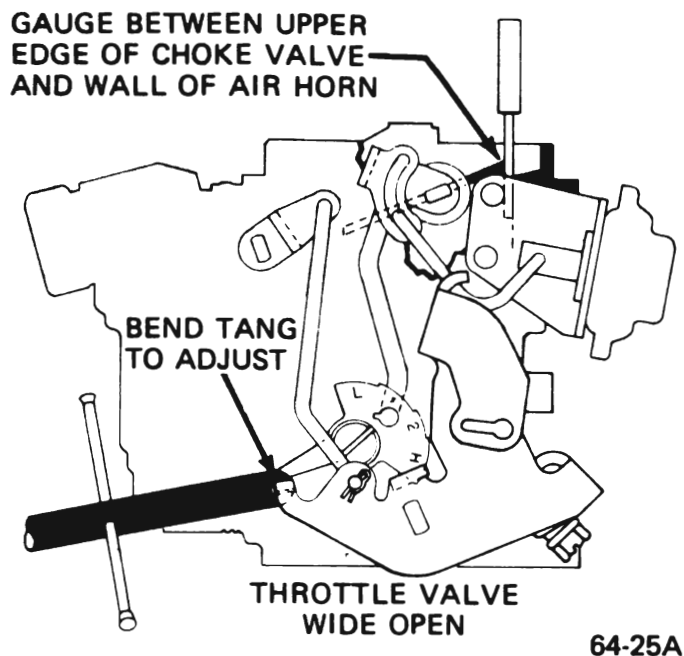


Figure 64-23 - Choke Unloader Adjustment

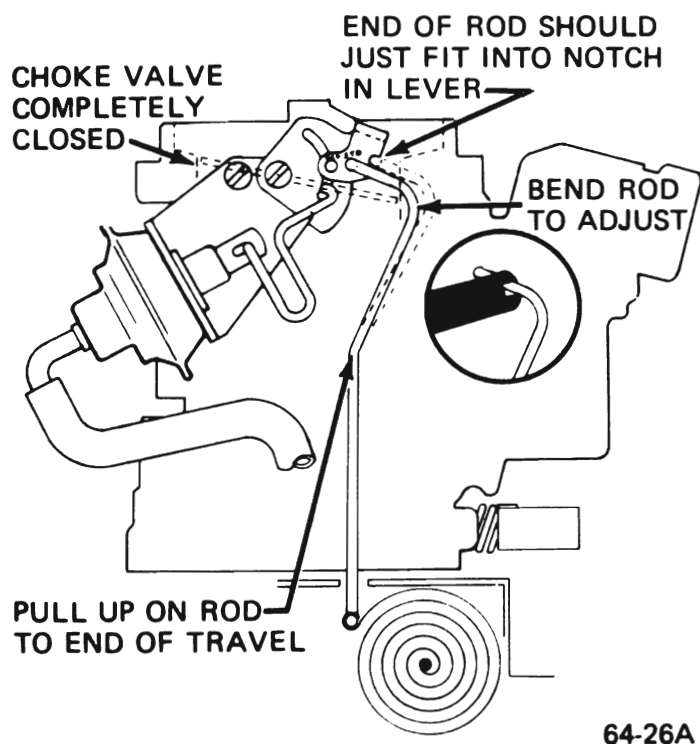


Figure 64-24 - Choke Coil Rod Adjustment

### G. Slow Idle Adjustment

With engine at normal operating temperature, adjust idle mixture and speed exactly as described in paragraph 64-5.

### H. Fast Idle Adjustment

With the addition of the idle stop solenoid, it will be necessary to make an initial idle stop setting with the fast idle screw. This will be made on the low step of the fast idle cam and will correspond to the speed specified with the idle stop solenoid electrically disconnected.

## DIVISION IV

### REMOVAL AND INSTALLATION

#### 64-16 ROCHESTER 2GV CARBURETOR R and R

##### A. Removal

1. Remove air cleaner.
2. Disconnect gas line at carburetor.
3. Disconnect choke coil rod.
4. Disconnect throttle cable.
5. Disconnect vacuum lines to carburetor.
6. Disconnect cruise control chain, if equipped.
7. Disconnect throttle spring.
8. Remove four (4) carburetor-to-manifold bolts.
9. RR vacuum hose fitting at back of carburetor.

##### B. Installation

1. Install manifold vacuum fitting at back of carburetor.
2. Install carburetor gasket and carburetor.
3. Connect throttle spring.
4. Connect cruise control chain, if equipped.
5. Connect vacuum lines to carburetor.
6. Connect throttle cable.
7. Connect choke coil rod.
8. Connect gas line to carburetor.
9. Replace air cleaner.



## DIVISION V

### OVERHAUL AND MAJOR SERVICE

#### 64-17 DISASSEMBLY, CLEANING AND INSPECTION OF ROCHESTER 2-BARREL CARBURETOR

##### A. Choke Disassembly and Removal of Air Horn

1. Mount carburetor on a proper mounting fixture such as J-5923.
2. Remove fuel inlet fitting, gasket, fuel filter, and filter spring.
3. Remove pump rod by removing lower retaining clip and rotating pump rod until lug on upper end of rod passes through upper pump lever.
4. Remove fast idle cam attaching screw. Then remove fast idle cam and rod assembly by rotating until lug on upper end of choke rod passes through slot in the upper choke lever and collar assembly.
5. Remove vacuum break diaphragm hoses from both vacuum breaks units and from each vacuum tube at throttle body.
6. Remove primary vacuum break diaphragm (throttle lever side) by removing two attaching screws. Vacuum break rod can now be removed from lever at end of choke shaft by rotating the rod until the end slides out of slot in lever and lug on other end of rod out of slot in end of diaphragm plunger shaft.
7. Remove secondary vacuum break unit (choke coil side) by first removing lever from end of choke shaft. Then remove lever from the diaphragm plunger rod and rod from diaphragm plunger shaft. Then remove two bracket attaching screws and remove diaphragm and bracket assembly from air horn.
8. Remove eight air horn attaching screws and carefully remove air horn assembly from fuel bowl by lifting gently upward.

##### B. Disassembly of Air Horn

1. Place air horn assembly inverted on bench. Remove float hinge pin and lift float assembly from cover. Remove float needle from the float arm. Remove float needle seat and fibre gasket.
2. Remove air horn gasket.
3. Remove power piston by depressing shaft and allowing spring to snap repeatedly, thus forcing the

power piston retaining washer from casting. If heavy staking is encountered, remove staking from around power piston retaining washer.

4. Remove the pump plunger assembly from inner pump arm by rotating assembly until the end of shaft will slide out of hole in inner pump lever. Remove pump lever and shaft assembly by loosening set screw on inner arm and removing outer lever and shaft assembly.

A plastic washer is used between the outer pump lever and air horn casting on the pump shaft. This should be removed from the pump shaft and not immersed in carburetor cleaner.

5. Remove two choke valve retaining screws, then remove choke valve from choke shaft. Remove choke shaft from air horn, then choke lever and collar assembly can be removed from choke shaft. Note position of the choke lever in relation to the choke trip lever on the end of the choke shaft for ease in reassembly.

##### C. Disassembly of Float Bowl

1. Remove pump plunger return spring from pump well. Remove small aluminum check ball from the bottom of pump well by inverting bowl and shaking into hand. Remove pump inlet screen from bottom of fuel bowl.
2. Remove main metering jets.
3. Remove power valve and fibre gasket.
4. Remove three venturi cluster attaching screws and remove cluster and gasket. Center cluster screw has smooth shank and fibre gasket for sealing the accelerator pump fuel by-pass.
5. Remove plastic main well inserts.
6. Using a pair of long nosed pliers, remove pump discharge ball spring "T" shaped retainer. Then remove pump discharge spring and steel discharge ball.
7. Invert carburetor and remove three throttle body to bowl attaching screws. Remove throttle body and throttle body to bowl gasket.

##### D. Disassembly of Throttle Body

No further disassembly of the throttle body is needed. The throttle valves should never be removed as the idle holes are drilled in direct relation to the location of the throttle valves and shaft. Removal of the throttle valves will upset this location. The throttle

body assembly is only serviced as a complete unit with throttle valves intact.

The plastic idle limiter caps should not be removed, except if it is necessary to clean out the idle channels or the idle mixture needles are damaged. If necessary to remove the idle mixture needles, break the plastic caps, then remove the mixture needles from the throttle body.

After installation of the mixture needles, it will be necessary to readjust the idle on the car and install new limiter caps provided in the repair kit.

### E. Cleaning and Inspection

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

1. Thoroughly clean carburetor castings and metal parts in carburetor cleaning solvent. Pump plunger or any fibre or rubber parts should never be immersed in carburetor cleaner. Wash pump plunger in clean solvent.

2. Blow out all passages in the castings with compressed air and blow off all parts until they are dry. Make sure all jets and passages are clean. Do not use wires for cleaning fuel passages or air bleeds.

3. Check all parts for wear. If wear is noted, defective 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 hinge pin for wear and float for dents or distortion.

(c) Check throttle and choke shaft bores for wear and out of round.

(d) Inspect idle mixture adjusting needles for burrs or grooves. Such a condition requires replacement.

(e) Inspect pump plunger cup; replace if damaged worn, or hard.

(f) Inspect pump well in bowl for wear or scoring.

4. Check filter for dirt or lint. If dirty, replace.

5. If for any reason, parts have become loose or damaged in the cluster casting, the cluster assembly must be replaced.

6. It is recommended that new gaskets be used

whenever the carburetor is disassembled or overhauled.

## 64-18 ASSEMBLY OF ROCHESTER 2-BARREL CARBURETOR

### A. Assembly of Throttle Body

1. If the idle mixture needles and springs had to be removed, turn the mixture needles in until finger tight. Back out screws two turns as a preliminary idle adjustment.

Do not install the new plastic limiter caps provided in the repair kit until the carburetor mixture has been adjusted after the carburetor is installed on engine. Refer to idle mixture adjustment section for proper adjustment procedure.

Do not force the idle mixture needles against their seats or damage may result.

2. Invert the float bowl assembly and place the new throttle body gasket on bowl. Install throttle body on bowl, using three screws and lockwashers. Tighten securely.

### B. Assembly of Float Bowl

1. Drop steel pump discharge check ball into discharge hole. Install pump discharge spring and "T" shaped retainer, staking retainer in place. Top of retainer must be flush with flat of bowl casting.

2. Install two main well inserts. Install venturi cluster with gasket. Install venturi cluster screws and tighten evenly and securely. Make sure center screw is fitted with fibre gasket and special smooth shank screw is used.

3. Install two main metering jets, power valve gasket and power valve.

4. Install small aluminum inlet check ball in pump inlet in the bottom of pump well; insert pump return spring and center in well by pressing downward with finger.

5. Install pump inlet screen in the bottom of float bowl.

### C. Assembly of Air Horn

1. Install choke lever and collar onto choke shaft. Tang on choke lever faces away from air horn and is on top of vacuum break lever.

2. Install choke shaft and lever assembly into air horn. Choke rod hole in the choke lever faces fuel inlet side of carburetor.

3. Install choke valve in choke shaft so that letters "RP" will face upward in finished carburetor. Install two new choke valve attaching screws but do not tighten securely until choke valve is centered. Center choke valve on choke shaft by holding choke valve tightly closed; then slide choke shaft in to obtain approximately .020 clearance between choke vacuum break lever and choke lever and collar assembly. Tighten choke valve screws securely and stake lightly in place. Choke valve will be perfectly free in all positions when installed correctly.

4. Install plastic washer over pump shaft and slide against outer lever. Install outer pump lever and shaft assembly into air horn with lever pointing towards choke shaft. Install inner pump arm with plunger hole inward and tighten set screw securely.

5. Attach pump plunger assembly to the inner pump arm with pump shaft off set pointing inward and install retainer.

6. Install float needle seat and gasket in air horn. Tighten needle seat securely, using a wide bladed screwdriver.

7. Install power piston into vacuum cavity. Lightly stake piston retainer washer in place. Piston should travel freely in cavity.

8. Install air horn gasket on air horn, fitting gasket over guide pin.

9. Attach float needle to float. Carefully position float and insert float hinge pin. Drop tang on rear of float arm should point downward toward air horn.

A fuel inlet baffle is used which surrounds the float needle seat. Make sure that the hinge pin slides through the holes provided in the baffle and also that the baffle is not distorted so that the float arm does not bind in any position.

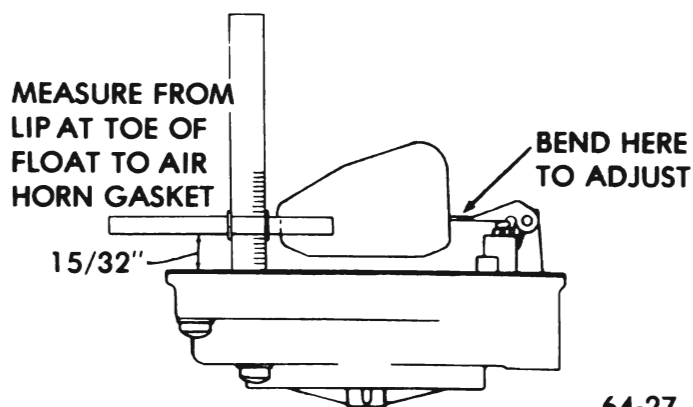
10. Install fuel inlet fitting, gasket, fuel filter, and relief spring.

#### 11. *Float level adjustment*

With air horn assembly inverted, measure distance from air horn gasket to lip at toe of float, as shown. Bend float arm as required to obtain 15/32 inch measurement. See Figure 64-25.

#### 12. *Float drop adjustment*

With air horn assembly held upright, measure distance from gasket to notch at toe of float as shown. Bend float tang as required to obtain a 1-7/8 inch measurement. See Figure 64-26.



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Figure 64-25 - Float Level Adjustment

13. Carefully place air horn assembly on float bowl, making certain that the pump plunger is properly positioned in the pump well. Lower the cover gently, straight down, then install air horn to float bowl attaching screws. Longer air horn screw goes in top of pump housing. Tighten evenly and securely.

14. Install primary vacuum break assembly onto throttle lever side of air horn. Rotate end of vacuum break rod so that it slides into slot in vacuum break lever on the end of the choke shaft. The other end of the vacuum break rod will slide into the vacuum diaphragm plunger lever by aligning lug on rod with slot in plunger shaft. Attach vacuum break assembly to the air horn casting with two attaching screws. Tighten securely.

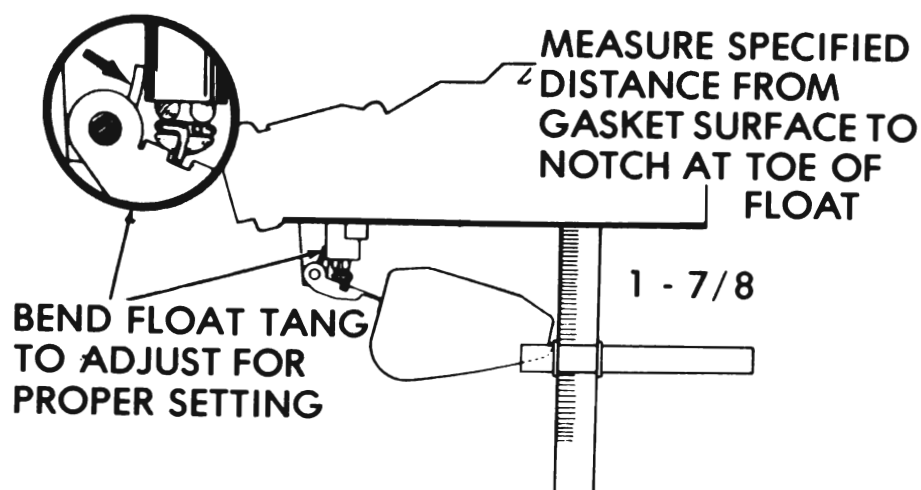
15. Install choke rod into choke lever and fast idle cam. Install fast idle cam screw and tighten securely. See Figure 64-20 for proper installation.

16. Install accelerator pump rod in pump lever and in throttle lever and install retainers.

17. Install secondary vacuum break lever on end of choke shaft with retaining screw. Slot in lever hangs downward when choke valve is open when installed correctly. Tighten securely.

18. Install secondary vacuum break assembly onto air horn using two attaching screws and actuating rod in slots in the vacuum break lever and vacuum diaphragm plunger shaft. Loop on secondary vacuum break rod hangs downward. Tighten vacuum break attaching screw securely.

19. Install vacuum hoses to primary and secondary vacuum break diaphragms. Then connect each vacuum hose to the separate tubes provided on the throttle body. See Figure 64-12.



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Figure 64-26 - Float Drop Adjustment

## DIVISION VI

### SPECIFICATIONS

#### 64-19 ROCHESTER 2GV CARBURETOR CALIBRATIONS

	350 Eng. Man.Trans.	350 Eng. Auto Trans. All Except California	350 Eng. Auto Trans. California
Note: All carburetors have a colored metal tag with a two-letter code for identification.			
Paint Color .....	Yellow	Black	Red
Model Designation	2GV	2GV	2GV
Number of Barrels .....	2	2	2
Code Letters	KB	KA	KE
Part Number	7092143	7042142	7042842
Throttle Bore	1-11/16"	1-11/16"	1-11/16"
Small Venturi	1/8"	1/8"	1/8"
Large Venturi .....	1-1/4"	1-1/4"	1-1/4"
Main Metering Jet Prod. ....	.060"-60°	.059"-60°	.059"-60°
High Altitude .....	Same	Same	Same
Note: No changes are required for altitude.			
Idle Tube Restriction	# 67	# 67	# 67
Idle Needle Hole	# 53	# 53	# 53
Spark Holes .....	.045x.125"	.045x.125"	.045x.125"
Pump Discharge Holes	2- # 62	2- # 67	2- # 67
Choke Coil Letters .....	AG	AG	AG
Fast Idle Cam Number	7038179	7043669	7043669
Dome Vent .....	2- # 67	2- # 67	2- # 67
Cluster Top Bleed	2- # 58	2- # 58	2- # 58

## 68-20 ROCHESTER 2GV CARBURETOR ADJUSTMENTS

Float Level Adjustment .....	15/32"	15/32"	15/32"
Float Drop Adjustment	1-7/8"	1-7/8"	1-7/8"
Pump Rod Adjustment .....	1-15/32"	1-15/32"	1-15/32"
Choke Tang Adjustment .....	.080"	.080"	.080"
Choke Unloader Adjustment	.180"	.180"	.180"
Idle Speed (On Car)			
Solenoid Energized .....	800 In "N"	650 In "D"	650 In "D"
Solenoid De-energized .....	600 In "N"	500 In "D"	500 In "D"
Vacuum Break Adjustment			
(PPrimary) .....	.160"	.150"	.150"
Vacuum Break Adjustment			
(Secondary) .....	.140"	.140"	.140"
Choke Coil Rod Adjustment	Gauge Slot	Gauge Slot	Gauge Slot
Choke Assembly Number	7042194	7042194	7042194