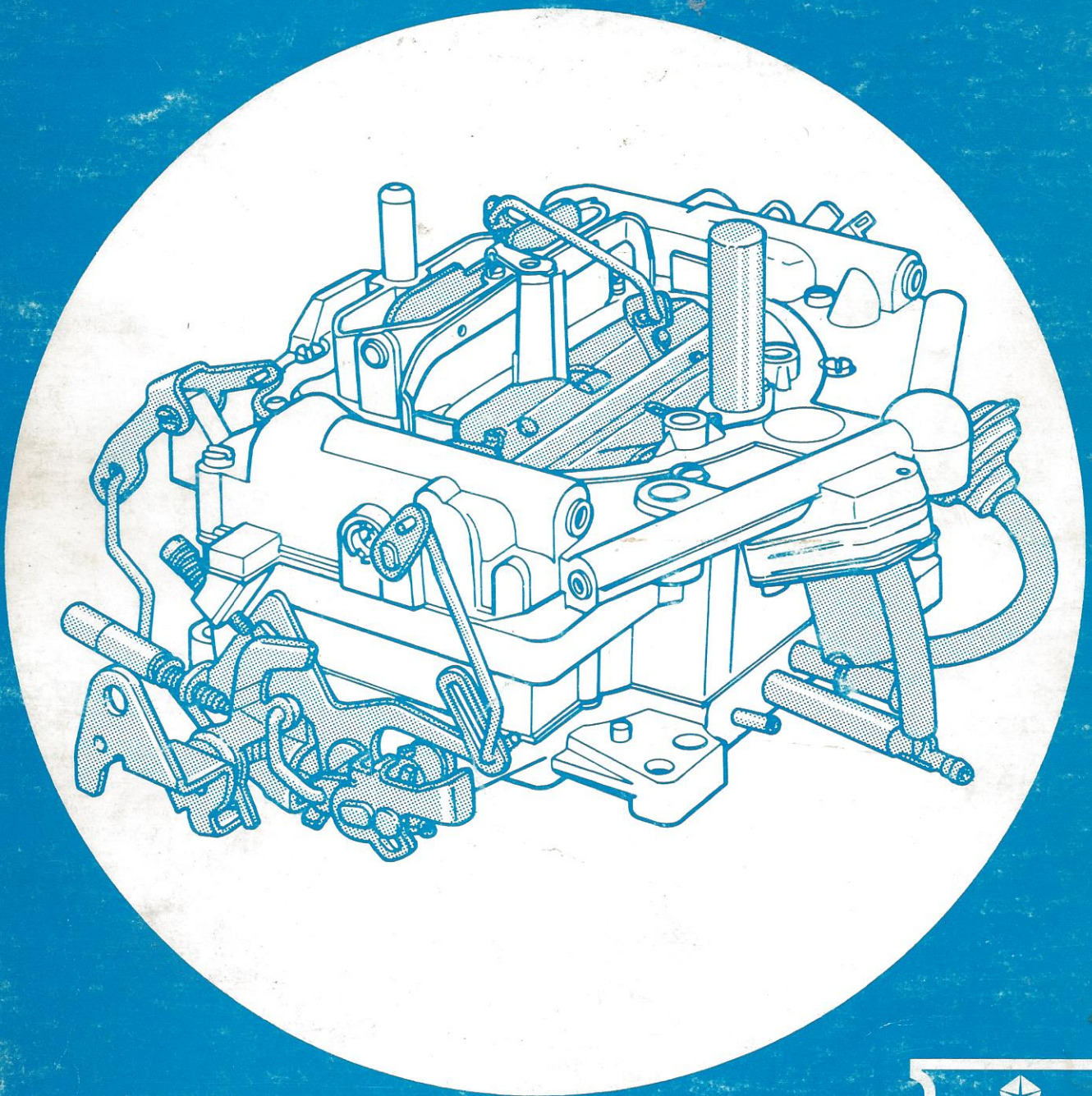
Chrysler Corporation Technical Guide

Thermo-Quad® Carburetor



SERVICE TRAINING

SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all motor vehicles. The service procedures recommended and described in this service manual are effective methods for performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

SAFETY GOGGLES SHOULD BE WORN AT ALL TIMES WHEN WORKING ON THE VEHICLE.

It is important to note that this manual contains various Cautions and Warnings which should be carefully read in order to minimize the risk of personal injury to service personnel or the possibility that improper service methods will be followed which may damage the vehicle or render it unsafe. It also is important to understand that these Cautions and Warnings are not exhaustive. The manufacturer could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently the manufacturer has not undertaken any such broad evaluation. Accordingly, anyone who uses a service procedure or tool which is not recommended must first satisfy himself thoroughly that neither his safety nor vehicle safety will be jeopardized by the service method he selects.

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SERVICE TRAINING

MASTER TECH SERVICE

CHRYSLER CORPORATION

1982
CARTER THERMO-QUAD®
CARBURETORS

THE INFORMATION CONTAINED IN THIS PUBLICATION HAS BEEN COMPILED TO PROVIDE A SELF-CONTAINED GUIDE FOR THE DIAGNOSIS, TEST, AND REPAIR OF CHRYSLER CORPORATION VEHICLES EQUIPPED WITH THERMO-QUAD® CARBURETORS.

THERMO-QUAD® CARBURETOR

INDEX

CAR

TRUCK

GENERAL INFORMATION

LOCATED AT THE END OF THIS PUBLICATION IS A GUIDE TO DIAGNOSING DRIVABILITY SYMPTOMS. THIS GUIDE IS A USEFUL TOOL IN PINPOINTING SPECIFIC CARBURETOR PROBLEMS.

This carburetor has a unique black main body or fuel bowl of molded phenolic resin. This acts as a very effective heat insulator. Fuel is kept cooler (approximately 20 degrees F) than in all-metal carburetor designs. (Figs. 1 and 2).

The air horn houses the choke valve, the air valve for the secondaries and its controls and adjustments, the fuel inlet system (two floats and inlet needles and seats), the complete accelerating pump system, primary boost venturi, vacuum controlled step-up piston and rods, low and high speed fuel metering systems (secondary jets, fuel discharge nozzles and all air bleeds and restrictions). The primary jets are in the main body.

The Thermo-Quad carburetor has unique features which require extra caution during all adjustments. The vacuum kick diaphragm provides **two separate functions.** It still provides for vacuum kick but it also controls the secondary air valve. Because of the separate nature of the two functions, two separate but interrelated adjustments are necessary and these adjustments must be performed in the proper sequence.

SERVICING THE CARBURETOR

A thorough road test and check of minor carburetor adjustments should precede major carburetor service. Specifications for some adjustments are listed on the Vehicle Emission Control Information label found in each engine compartment.

Many performance complaints are directed at the carburetor. Some of these are a result of loose, misadjusted or malfunctioning engine or electrical components. Others develop when vacuum hoses become disconnected or are improperly routed. The proper approach to analyzing carburetor complaints should include a routine check of such areas.

(1) Inspect all vacuum hoses and actuators for leaks. Refer to the vacuum hose routing diagram label located under the hood in the engine compartment for proper hose routing.

(2) Tighten intake manifold bolts and carburetor mounting bolts to specifications.

(3) Perform cylinder compression test.

(4) Clean or replace spark plugs as necessary.

(5) Test resistance of spark plug cables.

(6) Inspect ignition primary wire and vacuum advance operation. Test coil output voltage, primary and secondary resistance. Replace parts as necessary.

(7) Check ignition timing.

(8) Check carburetor idle mixture and speed adjustment. Adjust throttle stop screw to specifications.

(9) Test fuel pump.

(10) Inspect manifold heat control valve in exhaust manifold for proper operation.

(11) Remove carburetor air filter element and blow out dirt gently with an air hose. Install a new recommended filter element if necessary.

(12) Inspect crankcase ventilation system.

(13) Road test vehicle as a final test.

Carburetor Removal

CAUTION: Do not attempt to remove the carburetor from the engine of a vehicle that has just been road tested. Allow the engine to cool sufficiently to prevent accidental fuel ignition or personal injury.

(1) Disconnect battery ground cable.

(2) Remove air cleaner.

(3) Remove fuel tank pressure vacuum filler cap. The fuel tank should be under a small pressure.

(4) Place a container under fuel inlet fitting to catch any fuel that may be trapped in fuel line.

(5) Disconnect fuel inlet line using two wrenches to avoid twisting the line.

(6) Disconnect throttle linkage, choke linkage and all vacuum hoses.

(7) Remove carburetor mounting bolts or nuts and carefully remove carburetor from engine compartment. Hold carburetor level to avoid spilling fuel from fuel bowl.

Cleaning Carburetor Parts

There are many commercial carburetor cleaning solvents available which can be used with good results.

The choke diaphragm, choke heater and some plastic parts of the carburetor can be damaged by solvents. Avoid placing these parts in **any** liquid. Clean the external surfaces of these parts with a clean cloth or a soft brush. Shake dirt or other foreign material from the stem (plunger) side of the diaphragm. Compressed air can be used to remove loose dirt **but should not be connected to the vacuum diaphragm fitting.**

If the commercial solvent or cleaner recommends the use of water as a rinse, "HOT" water will produce better results. After rinsing, all trace of water must be blown from the passages with air pressure. Never clean jets with a wire, drill, or other mechanical means, because the orifices may become damaged, causing improper performance.

When checking parts removed from the carburetor, it is recommended that new parts be installed whenever the old parts are questionable.

Carburetor Installation

Inspect the mating surfaces of carburetor and intake manifold. Be sure both surfaces are clean and free of nicks, burrs or other damage.

Place a new flange gasket on manifold surface.

Some flange gaskets can be installed up-side down or backwards. To prevent this, match holes in the flange gasket to holes on bottom of carburetor, then place gasket properly on intake manifold surface.

(1) Carefully place carburetor on manifold without trapping choke rod under carburetor linkage.

(2) Install carburetor mounting bolts or nuts and tighten alternately, a little at a time, to compress flange gasket evenly. The nuts or bolts must be drawn down tightly to prevent vacuum leakage between carburetor and intake manifold.

(3) Connect throttle and choke linkage and fuel inlet line.

(4) Check carefully for worn or loose vacuum hose connections. Refer to the vacuum hose routing diagram label located under the hood in the engine compartment.

(5) Check to be sure the choke plate opens and closes fully when operated.

(6) Check to see that full throttle travel is obtained.

(7) Install air cleaner. The air cleaner should be cleaned or replaced at this time to insure proper carburetor performance.

(8) Connect battery cable.

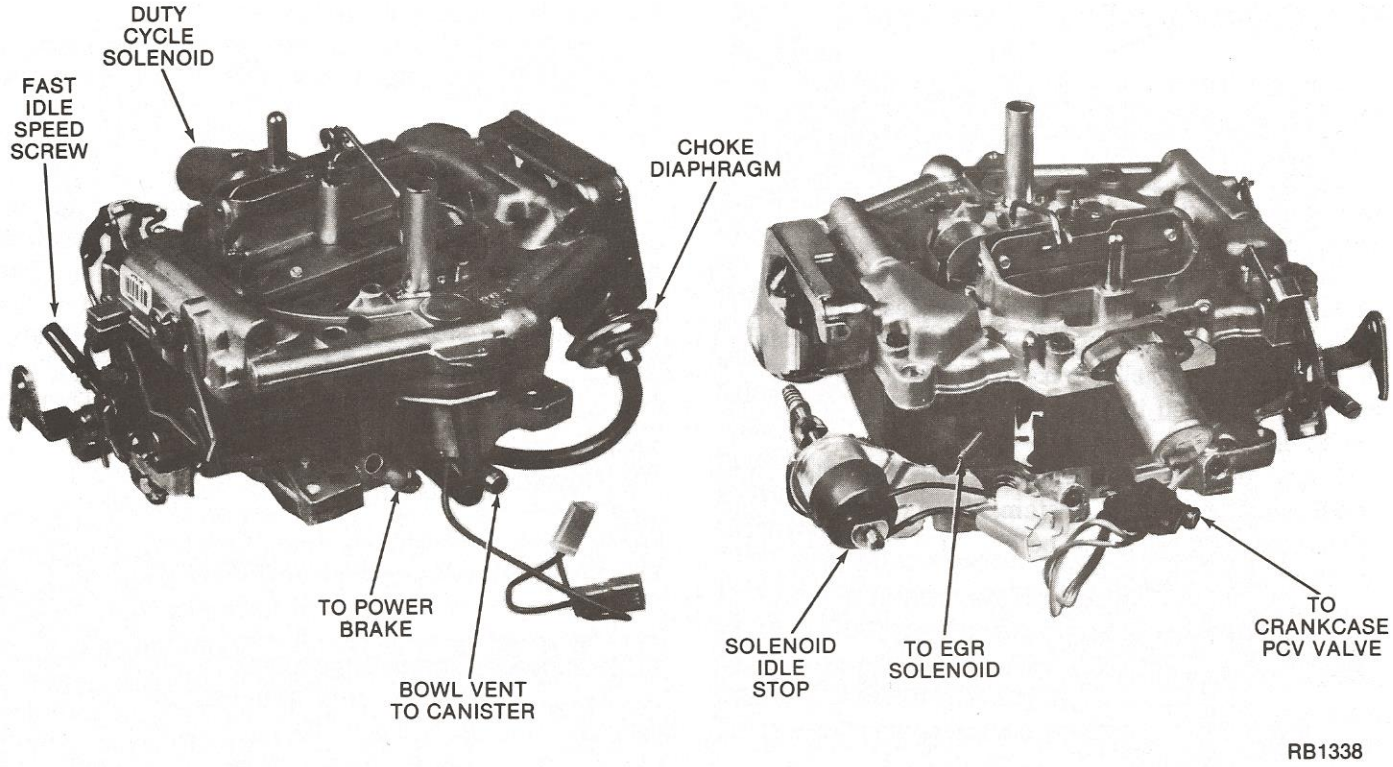


Fig. 1—Carburetor Assembly—Car

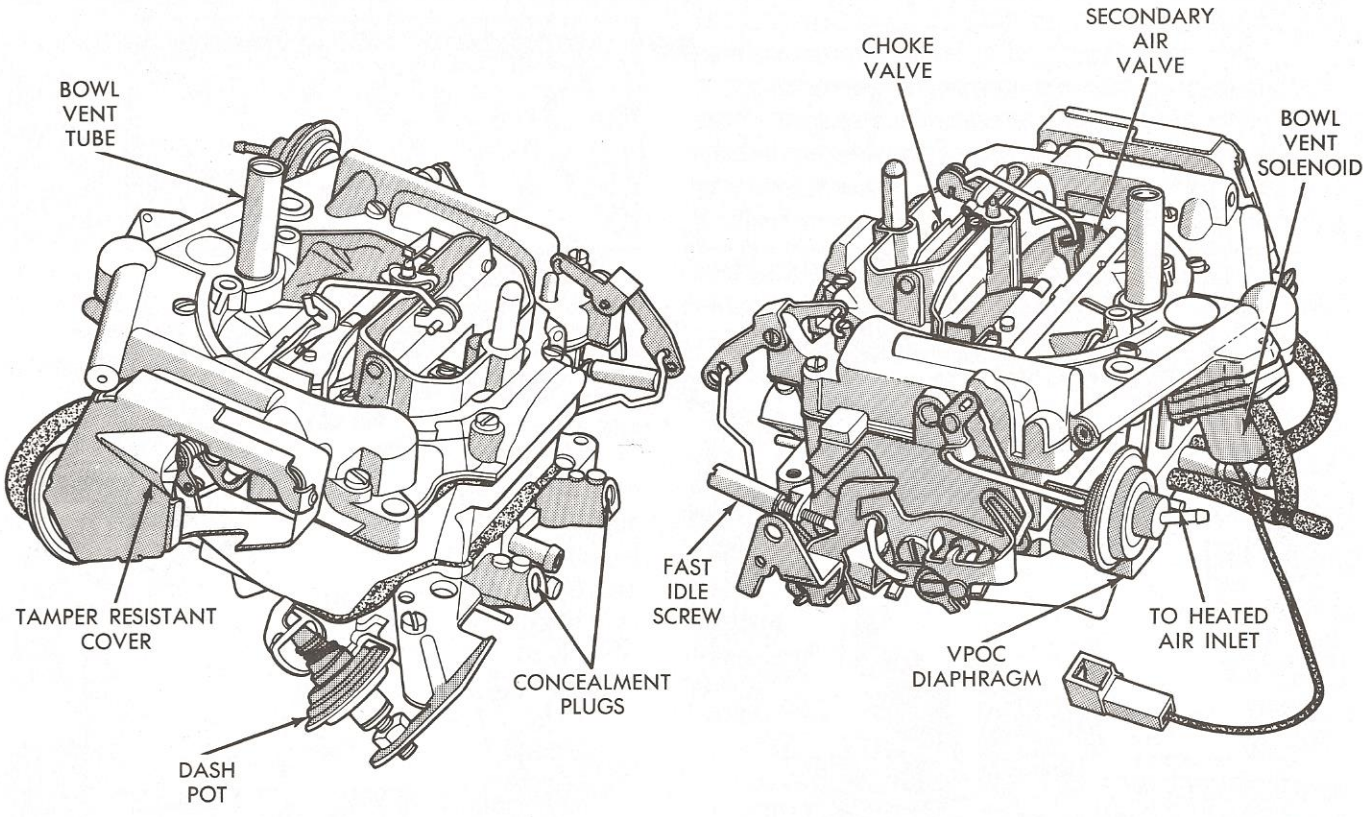


Fig. 2—Carburetor Assembly—Truck

O² FEEDBACK SOLENOID (Figs. 6 and 7)

The function of the O² Feedback Solenoid is to provide limited regulation of the fuel-air ratio of a feedback carburetor in response to electrical signals from the Spark Control Computer. It performs this task by metering air-flow and operates in parallel with a conventional fixed main metering jet.

The O² feedback solenoid includes, in addition to a protective case, such attaching surfaces and passageways as are required for the directing and containing of main system fuel when the solenoid assembly is correctly installed in a feedback carburetor designed for its use.

If problems are experienced with the Electronic Feedback Carburetor System, the system and its related components must be checked before carburetor work is begun. Close attention should be given to vacuum hose condition, hose connections, and any area where leaks could develop. In addition, the related wiring and its connectors must be checked for excessive resistance. In normal service, the mixture should not require adjustment. The idle set rpm can be checked without removal of the tamper resistant plug.

Tampering with the carburetor is a violation of Federal Law. Adjustment of the carburetor idle, air-fuel mixture can only be done under certain circumstances. Adjustment should only be considered if an idle defect still exists after normal diagnosis has revealed no other faulty condition, such as, incorrect idle speed, faulty hose or wire connection, etc. Also, it is important to make sure the Combustion Computer systems are operating properly. Adjustment of the carburetor idle air-fuel mixture should also be performed after a major carburetor overhaul.

Upon completion of the carburetor adjustment, it is important to reinstall the plug. The proper procedure is outlined later in this group.

Vacuum Port Identification

All Thermo-Quad carburetors used on vehicles equipped with exhaust gas recirculation (EGR) will have a venturi vacuum port on the side of the carburetor; this is the only vacuum port located in the main body. All other vacuum supply ports are located in the throttle body as shown in (Fig. 3).

Five conventional circuits are found in the Thermo-Quad carburetor:

(1) Float circuit
(2) Low-speed circuit (in the primary side)
(3) High-speed circuit (primary and secondary)
(4) Accelerator pump circuit
(5) Choke circuit (consisting of linkages to operate from a choke mechanism in the manifold cavity).

The Float Circuit (Fig. 4)

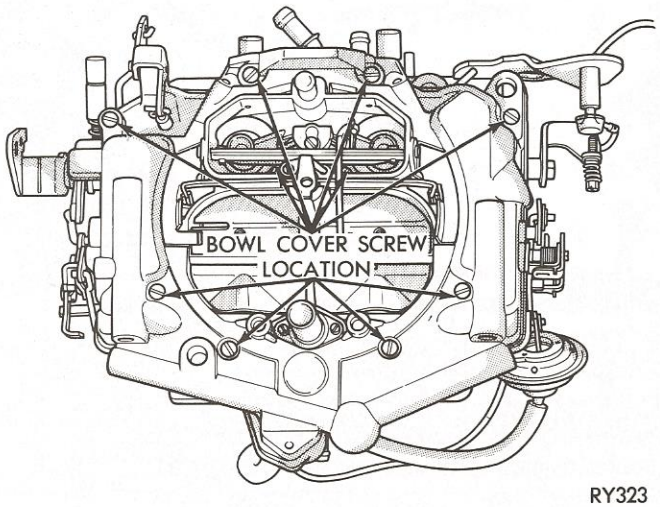
The purpose of the float circuit is to maintain an adequate supply of liquid fuel at the proper, predetermined level in the bowl for use by the low-speed, high-speed, pump and choke circuits.

Two separate float circuits are used, each circuit containing a float assembly and needle and seat. All circuits are supplied with fuel from the fuel bowl.

The Low-Speed Circuit (Figs. 5 and 6)

Fuel for idle and early part throttle operation is metered through the low-speed circuit which is located on the primary side only.

Liquid gasoline enters the idle wells through the main metering jets. Each low-speed jet has a cali-



Carburetor Assembly Top View

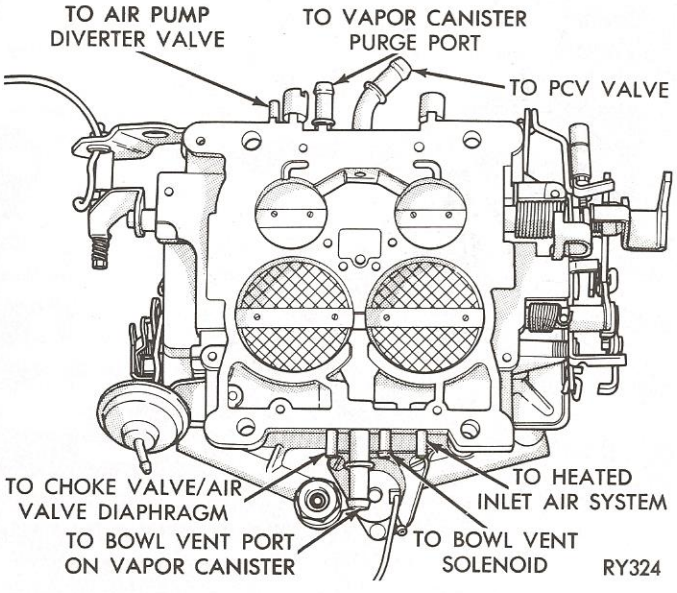


Fig. 3—Vacuum Port Identification

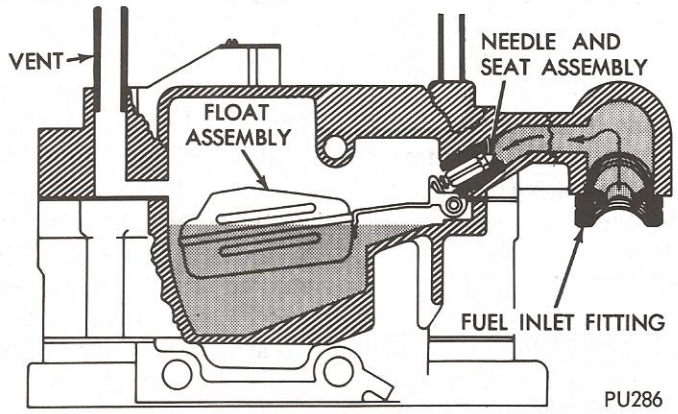


Fig. 4—Float System

brated orifice at its lower tip which measures the amount of fuel for idle and early part throttle operation. The air by-pass passages, economizers and idle air bleeds are carefully calibrated and serve to break up the liquid fuel and mix it with air as it moves through the passages to the idle ports and idle adjustment screw ports. Turning the idle mixture screws toward their seats reduces the quantity of fuel mixture supplied by the idle circuit.

The idle system is equipped with a restrictor in the idle channel, located between the transfer slot and the idle port, which limits the maximum attainable idle mixture.

The High-Speed Circuits

Fuel for part throttle and full throttle engine operation is supplied through the high-speed circuit, which is divided into the primary high-speed circuit and secondary high-speed circuit. These two circuit functions are described separately, as follows:

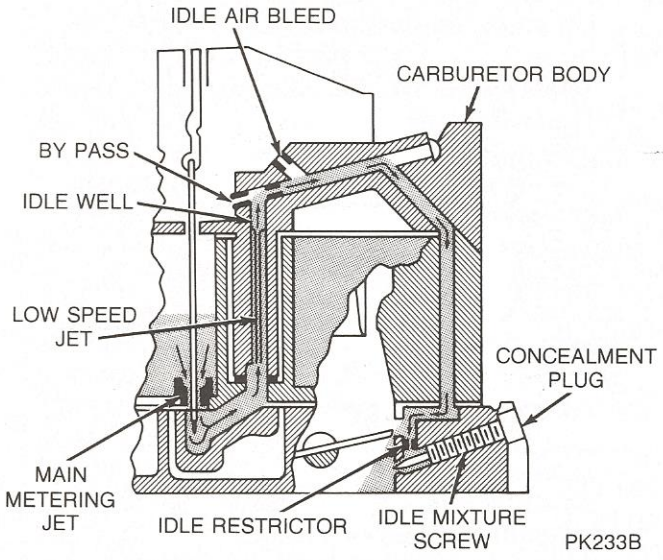


Fig. 5—Low Speed System

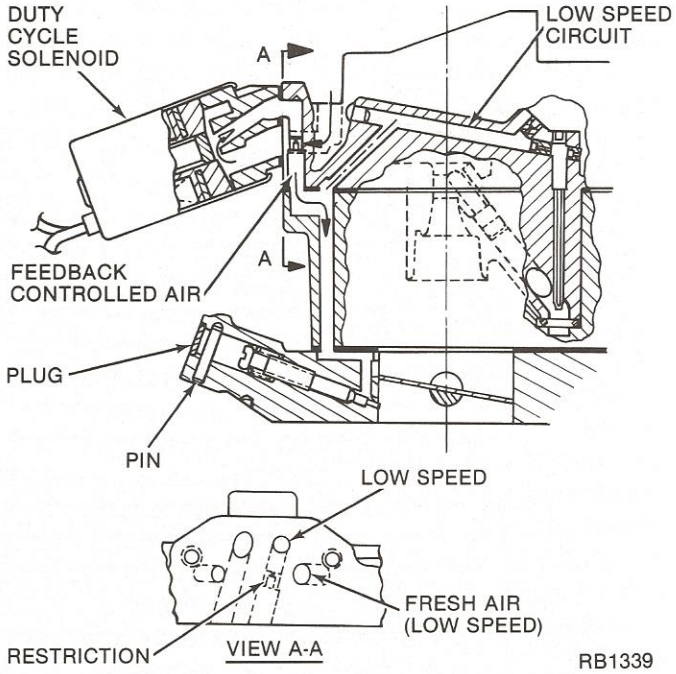


Fig. 6—Low Speed System—With O² Feedback

High Speed Circuit—Primary Side (Figs. 7 and 8)

In the primary metering section, the two metering rods are yoked to a single step-up piston which rides in a cylinder in the bowl cover casting. The primary jets which work with the metering rods are located in the plastic fuel bowl. The step-up piston has a lift rod which extends down through a passage in the fuel bowl into the throttle body. The bottom end of the rod rides on a lever operated by a cam on the primary throttle shaft.

In the low- and medium-speed range, the cam and lever lift the step-up piston and metering rods in pro-

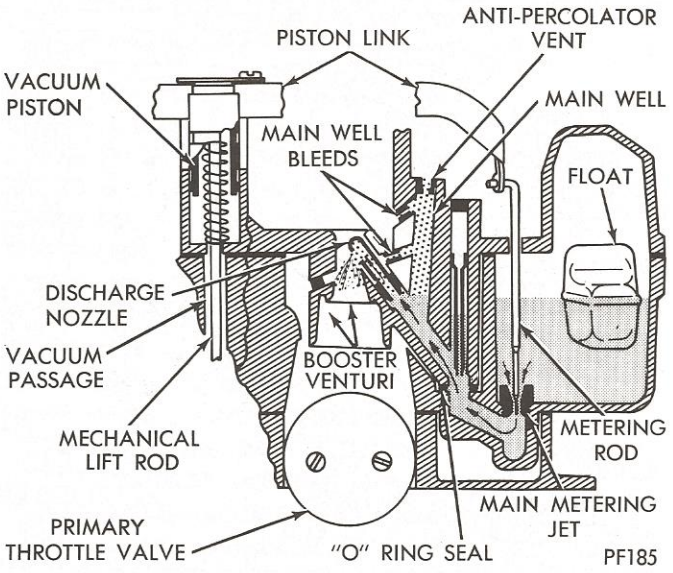


Fig. 7—Primary High Speed System

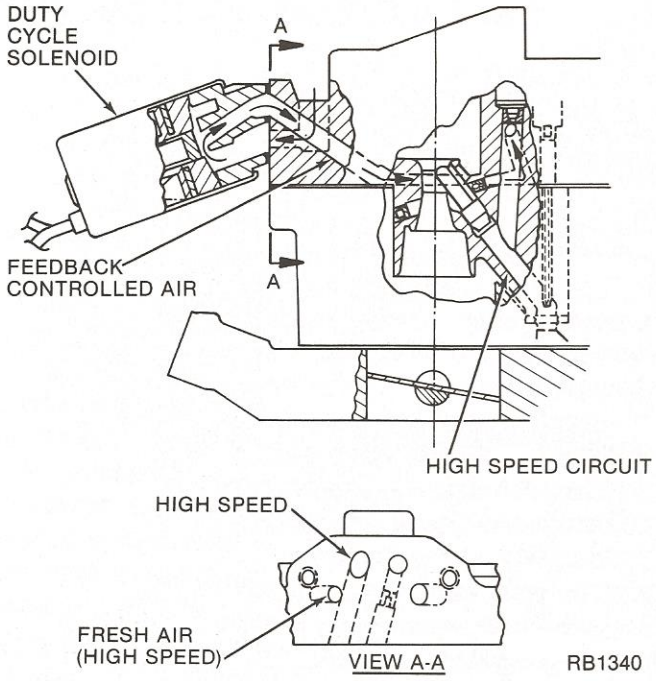


Fig. 8—High Speed System—With O²Feedback

portion to the primary throttle valve opening. This action provides positive mixture control.

The length of the step-up piston lift rod is factory-adjusted with equipment not available in service. Tampering with the setting will upset performance and emission control.

High Speed Circuit—Secondary Side (Fig. 9)

Liquid fuel for the high-speed circuit in the secondary portion of the carburetor is metered at the secondary metering jets. There are no metering rods in the secondary metering jets.

The main bleed tubes in the secondary side with their calibrated perforations and air bleeds, function to provide sensitively calibrated air-fuel mixtures in response to engine demands.

A spring-loaded air valve is located in the secondary side of the carburetor which is opened by air velocity through the secondary bores and closed by accurately-adjusted spring tension. A unique feature of this air valve is its shape. The lower edge of the valve is contoured in such a manner that when air velocity through the carburetor is high, and the lower edge of the air valve approaches the secondary nozzles, the contours act as venturi to increase air velocity at the tips of the nozzles.

Air Valve Diaphragm Operation (Fig. 10)

In addition to the air-valve functions described, an air valve diaphragm is used to further control the air valve. The operation of the dashpot plus the control restrictions and passages is as follows:

During primary throttle operating condition (secondary valves not open) manifold pressure (vacuum) is transmitted through the passages connecting the air valve diaphragm to the underside of the carburetor flange. If the secondary valves are opened from either a closed throttle or part throttle position of the primary valves, the restrictions "A", "B" and "C" bleed off manifold pressure to the diaphragm thus allowing the air valve to open at a rate that will provide smooth secondary operation.

Restrictions "A" and "C" are series restrictions for controlling rate of pressure bleed off to the diaphragm with the secondary throttle valves closed. Restriction "B" has an added function: During steady, extreme high-speed operation (70 mph approx.) it is possible that the secondary valves may be opened very slightly. If the diaphragm was directly connected to

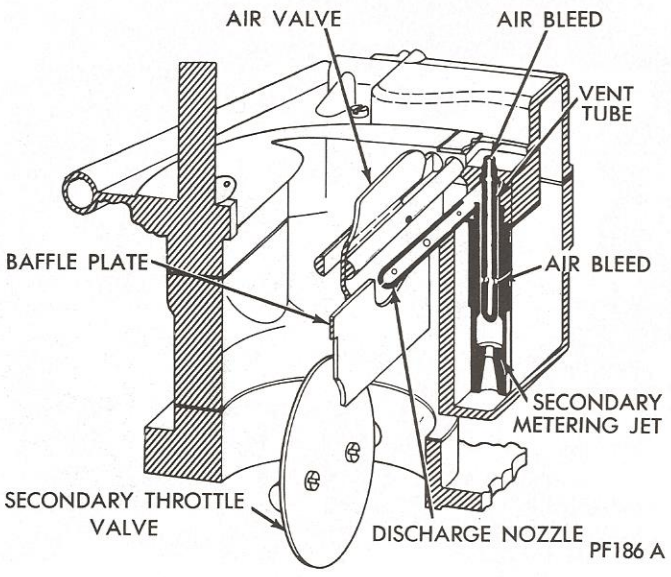


Fig. 9—Secondary High Speed System

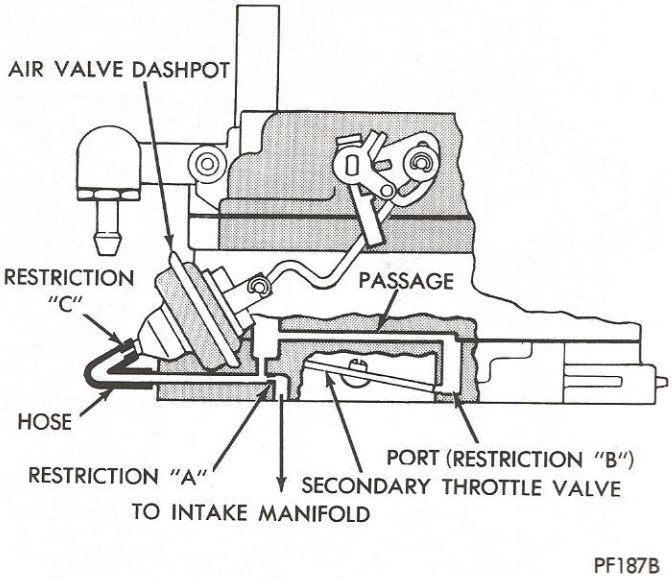


Fig. 10—Air Valve Dashpot Operation

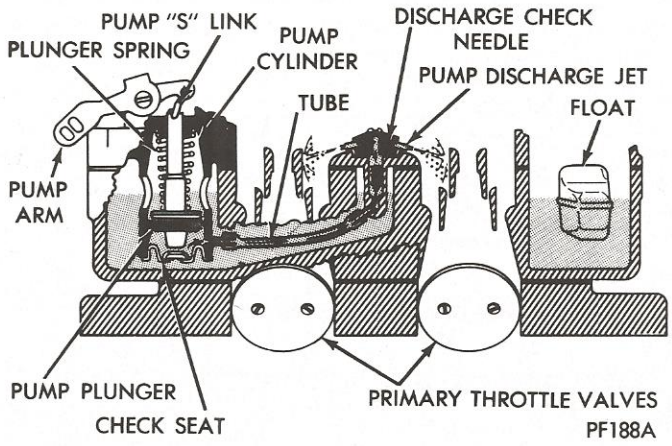


Fig. 11—Accelerator Pump System

manifold vacuum at all times, the diaphragm might pull the air valve to a closed position causing an over-rich mixture. Restriction "B" prevents this possibility of over-richness. When the secondary is slightly opened the restriction at "B" bleeds off a part of the manifold vacuum to the diaphragm. The diaphragm can then properly position the air valve for satisfactory performance.

Accelerator Pump Circuit (Fig. 11)

The accelerating pump circuit, located in the primary side of the carburetor, provides a measured amount of fuel necessary to insure smooth engine operation upon acceleration at lower vehicle speeds.

When the throttle is closed, the pump plunger moves upward in the pump cylinder and fuel is drawn into the pump cylinder through the intake check, located at the bottom of the cylinder. The discharge check (needle) is seated at this time to prevent air from being drawn into the pump cylinder.

When the throttle is opened, the pump plunger moves downward closing the intake check and forcing fuel out through the discharge passage, past the discharge check needle and out through the pump jets.

At higher speeds, pump discharge is no longer necessary to insure smooth acceleration. Therefore, in order to prevent unnecessary plunger movement, external pump linkage is so constructed that it travels "over center" when the throttle is in the higher speed positions, thus imparting just enough stroke to the plunger to keep all passages filled with liquid fuel.

A plastic tube is used to connect the outlet opening at the bottom of the pump cylinder with passage just below the discharge check. Make sure this tube is not damaged or collapsed when servicing the carburetor.

The spring in the pump cylinder, above the plunger is used to remove all free play from the pump operating linkage and insure an instant fuel discharge the instant the throttle valves are cracked.

SERVICE PROCEDURES

DISASSEMBLING CARBURETOR

(1) Place carburetor assembly on repair stand Tool C-3886. Repair stand is used to protect throttle valves from damage and to provide a suitable base for working.

(2) Remove duty cycle solenoid and its gasket.

(3) Remove idle stop carburetor switch and bracket assembly.

(4) Remove rod retainers that holds throttle connector rod to accelerator pump arm and throttle lever, then remove rod from carburetor.

(5) Remove accelerator pump arm screw and disengage from pump rod "S" link, (leave "S" link connected to pump rod) then remove lever.

(6) Remove rod retainers and washer that holds choke diaphragm connector rod to choke vacuum diaphragm and air valve lever.

(7) Remove rod retainer that holds choke connector rod to choke countershaft.

(8) Remove step up piston cover plate attaching screw and cover plate. Remove the metering rod cover plates then remove step up piston and link assembly with step up rods. Remove step up piston spring.

(9) Remove discharge pump nozzle housing screw and remove housing with gasket. Invert carburetor and remove discharge check needle.

(10) Remove 10 bowl cover screws, two of the bowl cover screws are located between choke valve and wall of bowl cover. Remove bowl cover and invert on bench to protect floats.

(11) Remove float bowl from throttle body.

Disassembling Bowl Cover

(1) Remove float lever pins and lift out float assemblies. It is suggested that the float on the pump side be marked so that floats can be reinstalled in their respective positions.

(2) Remove two needle valves from their respective seats, after marking one on pump side for identification. Using a wide blade screw driver, remove needle valve seats. Be sure each needle valve is returned to its original seat at reassembly.

(3) Remove secondary metering jets (Fig. 16).

(4) Remove acceleration pump passage tube (plastic) and bowl cover gasket.

(5) Remove accelerator pump rod "S" link. To remove pump plunger assembly, use a small rod placed on upper end of plunger shaft and tap lightly with a

small hammer (Fig. 12). **Use care not to damage plunger shaft hole in bowl cover. This should be done with fingers under lower portion of pump cylinder in order to catch intake check seat, pump plunger and spring. Check seat will be damaged when pump plunger is being driven out. Always install a new check seat and plunger upon reassembly.**

(6) Remove "L" shaped fuel inlet hose.
(7) Remove fuel inlet fitting and gasket.
(8) Remove solenoid bowl vent valve assembly.

Throttle Body

(1) Remove step-up actuating lever.

(2) Remove choke diaphragm and bracket assembly with hose and place to one side to be cleaned as a special item. Liquid cleaners may damage diaphragm material. **The carburetor vacuum fitting hides a very small vacuum passage restriction. Clean passage only with compressed air.**

(3) Using procedure outlined in "Concealment Plug Removal Procedure" in the adjustment area at the end of this section. Remove idle mixture screws from throttle body.

It is not advisable to remove the throttle shafts or valves unless wear or damage necessitates the installation of new parts. During the manufacture of the carburetor, the location of the idle transfer ports and the idle discharge ports to the valve is carefully established for one particular assembly (Fig. 13).

If new throttle shafts should be installed in an old worn body, it would be very unlikely that the original relationship of these ports to the valves would be obtained. A very slight change in the port relationship to the valves would adversely affect normal carburetor operation between curb idle and 30 miles per hour.

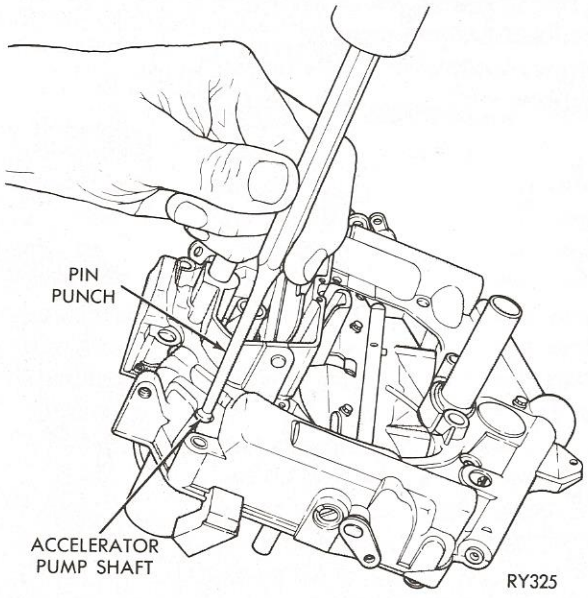


Fig. 12—Removing Accelerator Pump

Main Body

(1) Remove primary "O" ring seals and discard.
(2) Remove primary metering jets (Fig. 14).

It is not necessary to remove the baffle plate from the main body. (Do not immerse main body in cleaning solvents for a prolonged period of time). The carburetor now has been disassembled into three main units, the air horn, main body and throttle body and the component parts of each disassembled as far as necessary for cleaning and inspection.

CLEANING CARBURETOR PARTS

Refer to General Information Section at front of Fuel System, for cleaning instructions.

INSPECTION AND REASSEMBLY

Check for cracks, warpage, stripped screw threads, or damaged or marred mating surfaces, on all major castings. The passages in the castings should be free of restrictions. Check the float assemblies for damage or any condition that would impair these items from further service. The throttle valves should be replaced if the edges have been nicked, burred or damaged. New valves may be installed. Be sure that the choke and throttle shafts are not bent or scored. Replace any broken or distorted springs. Replace all screws and lockwashers that show signs of stripped threads or distortion.

Throttle Body

If necessary to replace throttle valves, remove staking with a file. These screws are staked to prevent loosening and care is necessary to avoid breaking off in shaft.

(1) Remove screws that hold throttle valves to throttle shaft.

(2) Slide damaged throttle valves out of bores. It

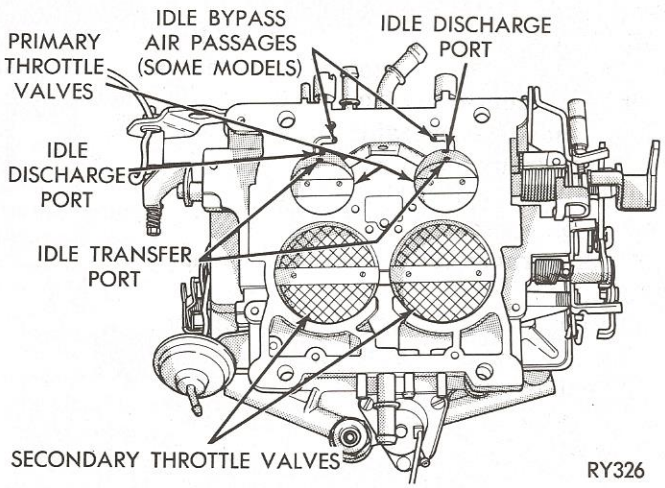


Fig. 13—Ports in Relation to Throttle Valves

should be noted at this time, that the numbered side is on the bottom (or carburetor mounting flange side) and opposite the vacuum port.

(3) Slide new throttle valves in position on throttle shaft, with the valve number on the bottom (flange side) and opposite the vacuum port.

(4) Install new screws, but do not tighten. Be sure fast idle speed adjusting screw is backed out. Hold valves in place with fingers (fingers pressing on high side of valves).

(5) Tap valves lightly in this position, tighten screws securely. Stake screws. Be sure to support shaft when staking screws. Operate the throttle shaft, from closed to open position, it should operate smoothly without drag or sticking. Hold throttle body up to a strong light. The light visible around the outer diameter of the valves on the bores should be uniform.

(6) Install secondary throttle valves in the same manner as described previously. The numbers stamped on the valves must be toward the bottom rear. For adjustment see secondary throttle adjustment.

(7) Install idle mixture screws in the throttle body. (The tapered portion must be straight and smooth to insure having correct idle mixture control.)

Choke/Air Valve Vacuum Diaphragm

(1) Inspect the vacuum diaphragm fitting to be sure that the passage is not plugged with foreign material. Leak test diaphragm to determine if it has internal leaks. To do this, depress diaphragm stem, then place finger over fitting to seal opening. Release stem. If stem moves more than 1/16 inch in ten seconds, leakage is excessive and assembly must be replaced.

(2) Position diaphragm and bracket assembly on locating dowel on mounting surface. Install and tighten attaching screw.

(3) Inspect rubber hose for cracks before installing on correct carburetor fitting (fitting next to diaphragm bracket). **Do not connect vacuum hose to diaphragm fitting until after vacuum kick adjustment has been made.** (See Carburetor Adjustments).

(4) Install step-up actuating lever with edges up (Fig. 15).

(5) Install throttle body gasket and main body.

(6) Install primary metering jets in floor of main body and tighten securely.

(7) Carefully install new primary "O" ring seals. **Be sure "O" ring seals are centered over holes in main body.**

Bowl Cover

(1) Install secondary metering jets over bleed tubes and tighten securely (Fig. 16).

(2) Position accelerator upper spring (heavy) on pump plunger with large diameter up (Fig. 17). Install spring and plunger in cylinder, compressing spring until rod extends through bowl cover, then install pump "S" link to retain assembly.

(3) Position intake check seat with flange down on a clean flat surface.

(4) Position accelerator pump cylinder over the assembly, then apply firm hand pressure to bowl cover to seat intake check seat in pump bore (Fig. 18).

(5) Install accelerator pump passage tube (plastic).

(6) Pour clean gasoline into clean container, approximately 1/2 inch deep and carefully lower pump housing into gasoline. Raise plunger and press lightly on plunger shaft to expel air from pump passage.

(7) Install accelerator pump discharge check nee-

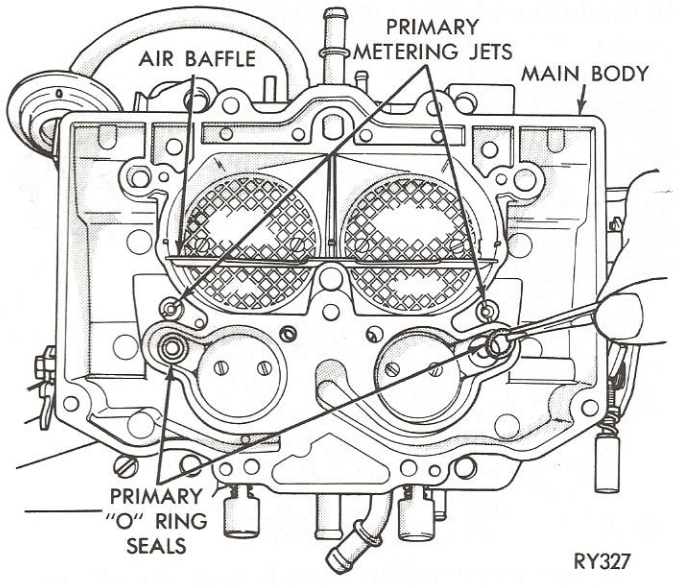


Fig. 14—Removing or Installing Primary "O" Rings and Metering Jets

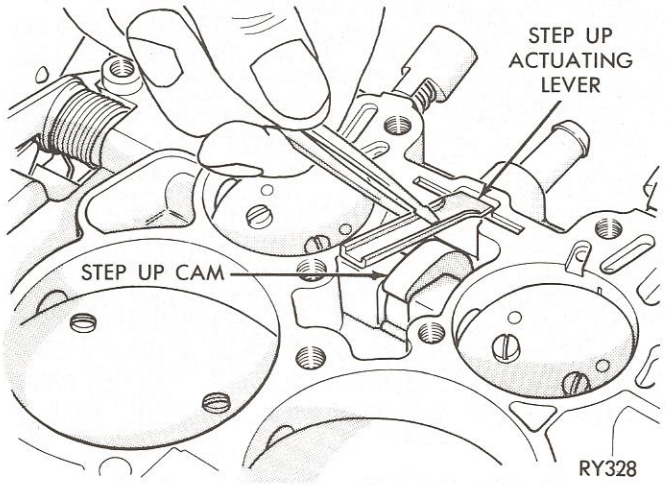


Fig. 15—Step-Up Actuating Lever Installation

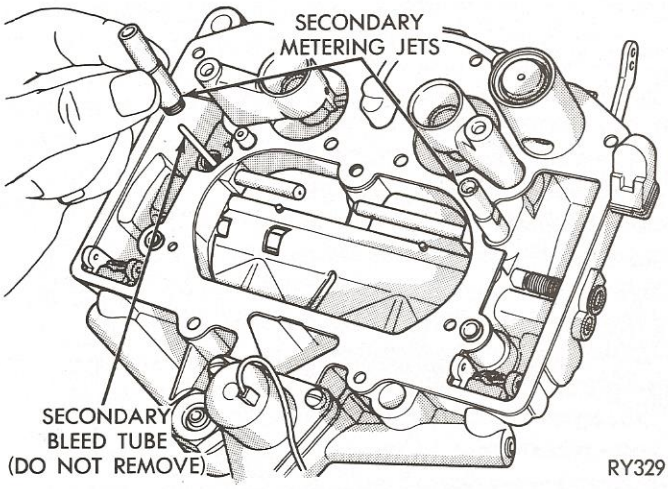


Fig. 16—Removing or Installing Secondary Metering Jets

dle in discharge passage. Using a small clean rod, hold discharge check needle firmly on its seat. Again raise plunger and press downward. No fuel should be emitted from the discharge passage. Fuel leakage at discharge passage indicates presence of dirt or a damaged check needle. Clean again and install a new check needle. Retest for leakage.

(8) If discharge check needle leaks after above test, attempt to reseat as follows:

(a) Insert a piece of drill rod down on needle. Lightly tap drill rod with a hammer to form a new seat. Remove and discard needle and install a new one. Retest as described previously. If service fix does not correct the condition, a new carburetor will have to be installed.

(b) Install accelerator pump jet housing, new gasket and attaching screw. Tighten securely.

(c) Test operation, a clear straight stream should emit from each jet. If streams are not identical, a new accelerator pump jet housing should be installed. After test, remove bowl cover and accelerator pump passage tube (plastic) from bowl cover.

(9) If carburetor is equipped with bowl vent, install new grommet seal on bowl vent arm, install solenoid bowl vent valve assembly.

(10) Install gaskets on fuel inlet needle seats, then install in bowl cover. Tighten securely. (Be sure each needle seat and needle is reinstalled in its original position if being reused).

(11) Place a new bowl cover to main body gasket in position on bowl cover, then slide right and left floats into position in bowl cover, then install float fulcrum pins. **Be sure marked float is installed on pump side of the bowl cover.**

(12) Refer to carburetor adjustments when checking float height.

(13) Install accelerator pump passage tube (plastic).

(14) **Examine primary "O" ring seals in bottom of main body to be certain that they are centered over holes (Fig. 14) then carefully lower bowl cover down on main body. The "O" rings will hold the bowl cover up slightly until screws are installed. Be sure bowl vent operating lever engages bowl vent actuating lever. Install ten cover screws and tighten to 35 inch-pounds, in two operations.**

(15) Install fuel inlet fitting with a new gasket and tighten securely.

(16) Install fuel line "L" hose and clamp securely.

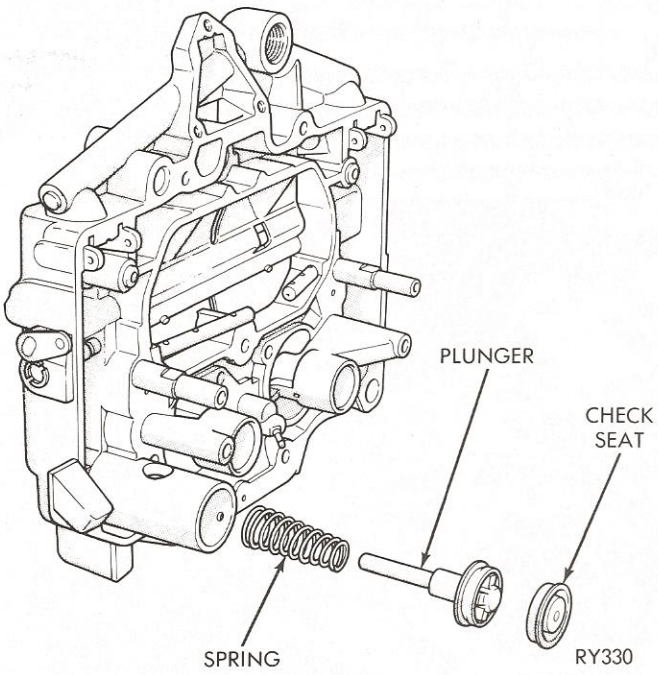


Fig. 17—Accelerator Pump Assembly Disassembled View

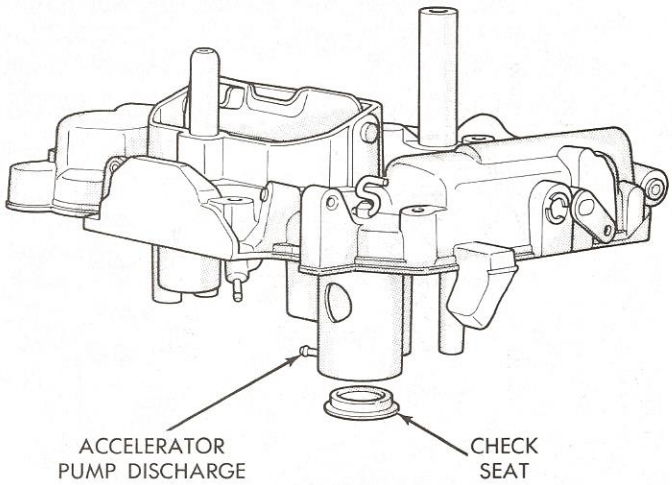


Fig. 18—Installing Check Seat

(17) Install solenoid bowl vent assembly and tighten securely.

(18) Engage pump rod "S" link with hole in accelerator pump arm, then position arm on air horn and install pump arm screw (Fig. 19). Operate lever to check freedom of operation after tightening screw.

(19) Engage throttle connector rod with hole in throttle lever. Install other end of accelerator pump arm (in specified hole) and install rod retainers.

(20) Install step up piston spring in piston cylinder, followed by step up rods and piston and arm assembly. Install cover plate and attaching screw. Tighten securely.

(21) Engage choke connector rod with hole in choke shaft lever, then swing rod at an arc until rod can engage choke countershaft. Install rod retainer.

(22) Engage choke diaphragm connector rod to air valve lever, then install washer and rod retainer. Install other end to choke vacuum diaphragm plunger and install rod retainer.

(23) Position duty cycle solenoid with gasket, on the air horn. Tighten retaining screws securely.

(24) Install idle stop carburetor switch and bracket.

Choke Vacuum Kick

The choke diaphragm adjustment controls the fuel delivery while the engine is running. It positions the choke valve within the air horn by action of the linkage between the choke shaft and the diaphragm. The diaphragm must be energized to measure the vacuum kick adjustment. Vacuum can be supplied by an auxiliary vacuum source.

Choke Unloader

The choke unloader is a mechanical device to partially open the choke valve at wide open throttle. It is used to eliminate choke enrichment during cranking of an engine. Engines which have been flooded or stalled by excessive choke enrichment can be cleared by use of the unloader. Refer to carburetor adjustments for adjusting procedure.

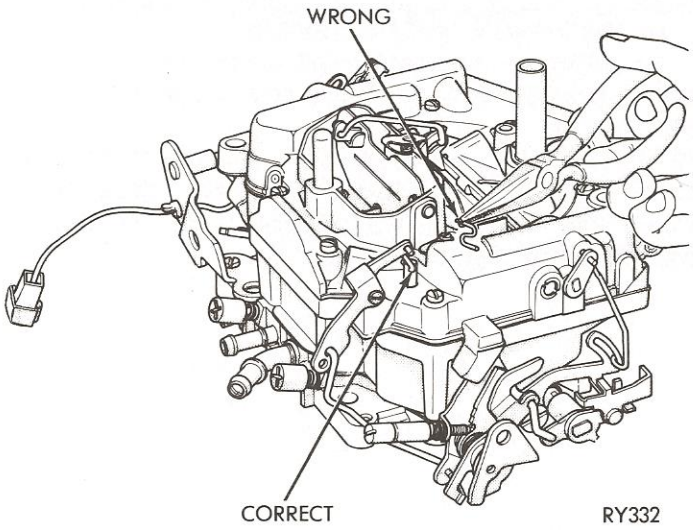


Fig. 19—Pump Shaft "S" Link Installation

Secondary Throttle Lockout

Secondary throttle operation is eliminated during the choke cycle by use of a latch triggered by the fast idle system.

Fast Idle Speed

Fast idle engine speed is used to overcome cold engine friction, stalls after cold starts and stalls due to carburetor icing. Make the adjustment to specifications. **If adjustment is necessary with less than 300 miles/500 km on the odometer, the specification must be reduced 75 RPM.**

Fast Idle Cam Position

This adjustment is used to provide cam step speeds at proper times during engine warmup.

Solenoid Idle Stop

Solenoid idle stops are used on vehicles equipped with either air conditioning or a heated backlite. The SIS is energized when either of those two accessories are turned on. The SIS will not change the throttle position, however, when rough engine idle occurs and the throttle is opened by the driver, the SIS will maintain a position that increases the idle speed.

VACUUM THROTTLE POSITIONER DIAGNOSIS

If vacuum throttle positioner does operate as described in Step 1 under adjustment, the faulty component can be diagnosed as described below.

(1) Check all wiring harness and hose connections in system.

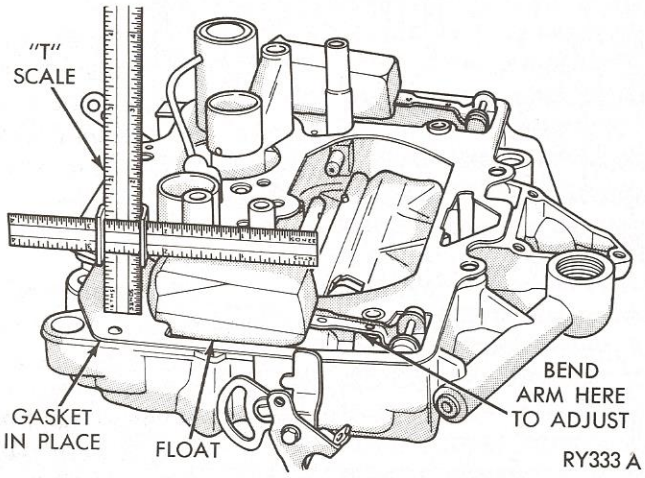
(2) **Vacuum Actuator Test**—Apply vacuum from an external source to the actuator. If actuator does not operate, replace. If actuator operates, pinch off supply hose and observe actuator. If actuator remains in operating position for one minute or more, unit is satisfactory.

(3) **Vacuum Solenoid Test**—Apply vacuum from an external source to manifold supply hose connection on solenoid valve. Disconnect wiring harness from solenoid and ground one terminal of solenoid. Connect 12 volts to other terminal and observe vacuum actuator operation. If actuator does not cycle as 12 volts is applied, replace solenoid. If operation is normal, it will be necessary to replace the speed switch.

THERMO-QUAD CARBURETOR ADJUSTMENT

1. FLOAT SETTING ADJUSTMENT

29/32" (± 1/32") TQ-9372S



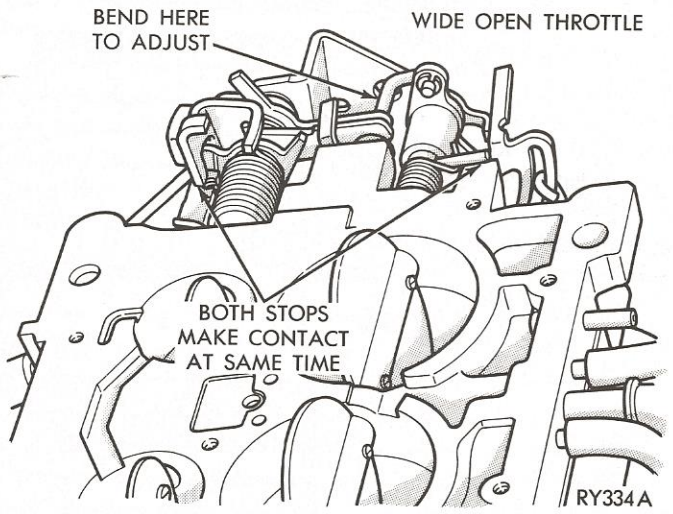
(1) Invert bowl cover.

(2) Install bowl cover gasket and with floats resting on seated needle the dimension of each float from bowl cover gasket to bottom side of float should be as indicated.

(3) If adjustment is necessary bend lever as shown above. **Never allow lip of float lever to be pressed against needle when adjusting.**

2. SECONDARY THROTTLE LINKAGE ADJUSTMENT

adjust link so that primary and secondary levers both contact stops at the same time TQ-9372S



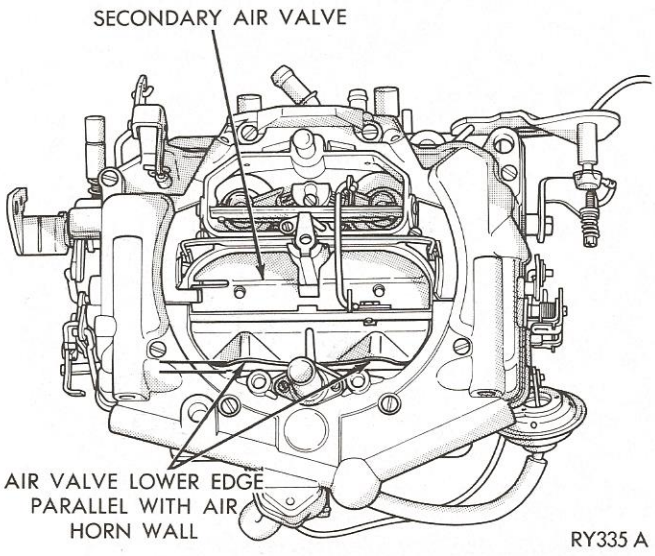
(1) Hold fast idle lever in curb idle position and invert carburetor.

(2) Open throttle valves to the wide open position. The primary and secondary levers should both contact stops at the same time.

(3) If an adjustment is necessary, bend secondary throttle operating rod at angle using pliers, until correct adjustment has been obtained.

3. SECONDARY AIR VALVE ALIGNMENT

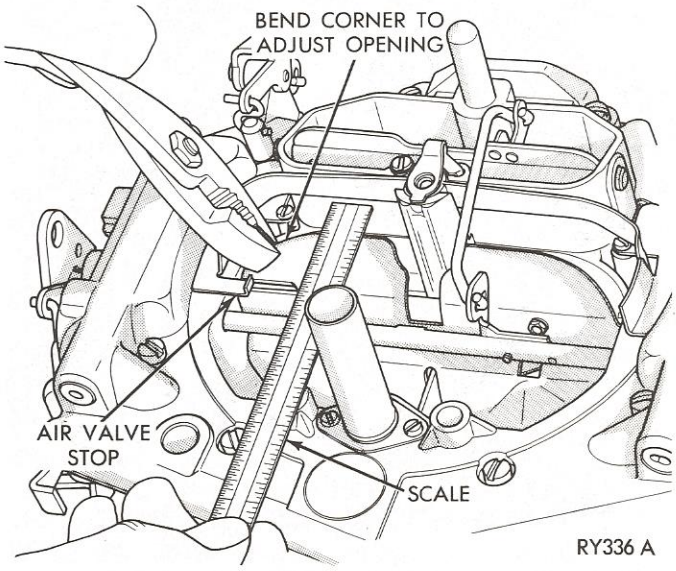
refer to procedure below — TQ-9372S



(1) With air valve in closed position the opening between the air valve and air horn wall at the long side must be at its maximum and parallel with air horn gasket surface.

4. SECONDARY AIR VALVE OPENING ADJUSTMENT

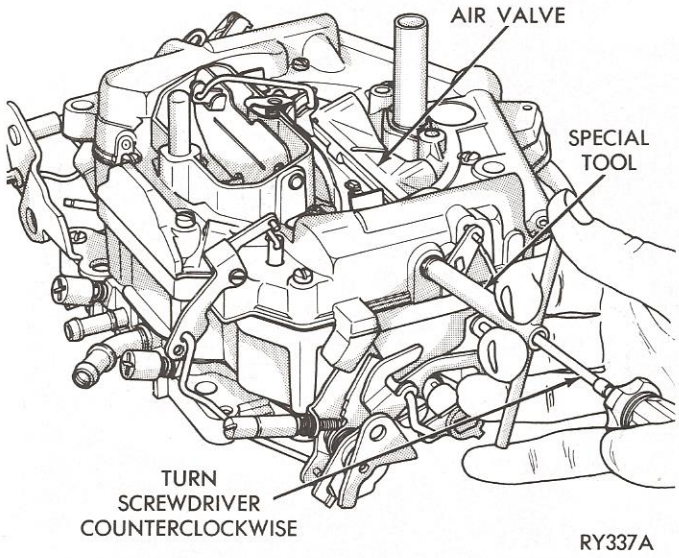
1/2" — TQ-9372S



(1) With air valve in wide open position, the opening of the air valve at the short side and air horn should be as shown in Specifications. The corner of air valve is notched for adjustment. Bend the corner with a pair of pliers to give proper opening.

5. SECONDARY AIR VALVE SPRING TENSION ADJUSTMENT

1-3/4 Turns From Contact — TQ-9372S



(1) Hold air valve adjustment plug with screwdriver when loosening lock plug or the spring may snap out of position requiring disassembly of the carburetor to retrieve the spring.

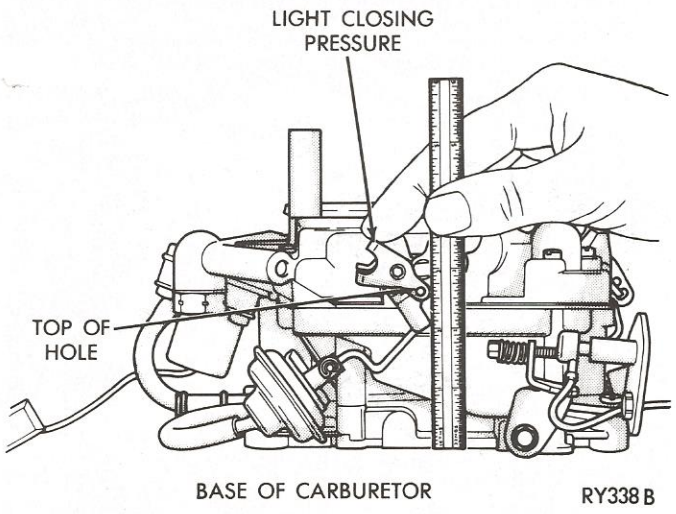
(2) Loosen air valve lock plug and turn air valve adjustment plug clockwise to allow air valve to position itself to wide open position.

(3) With a long screwdriver that will enter center of Tool C-4152-B positioned on air valve adjustment plug, turn plug **counterclockwise** until air valve contacts stop lightly, test with finger, then an additional turn (refer to specifications).

(4) Hold adjustment plug with screwdriver, and tighten lock plug securely with Tool C-4152-B. Be sure adjustment does not move. Check air valve for freedom of movement.

6. CHOKE CONTROL LEVER ADJUSTMENT

3-3/8" **off vehicle** — TQ-9372S



(1) Remove two blind rivets securing tamper resistant cover and remove cover. Place carburetor on flat object with surface flush against bottom of flange and extending out under choke control lever.

(2) Close choke by pushing on choke lever with throttle partly open.

(3) Measure vertical distance from top of rod hole in control lever down to flat surface simulating carburetor bottom.

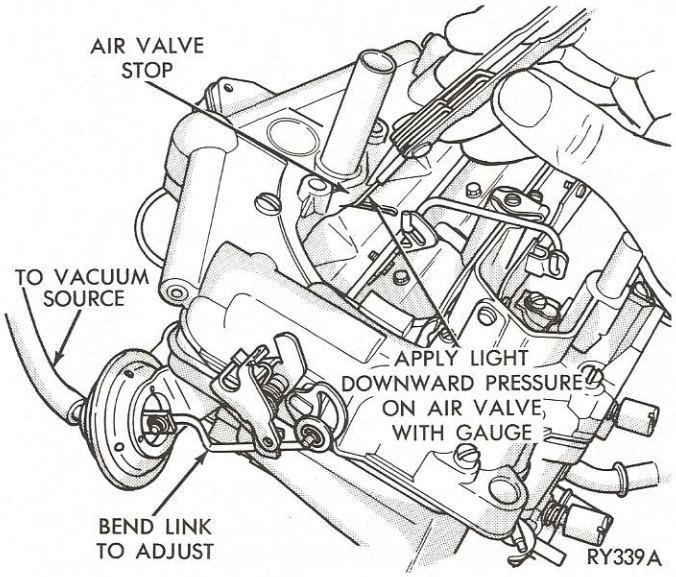
(4) Scale should read 3-3/8 inches.

(5) Adjust by loosening screw securing choke lever (left hand thread) to shaft and rotating lever to correct position.

IF CHOKE CONTROL LEVER ADJUSTMENT IS CHANGED THE VACUUM KICK, FAST IDLE CAM POSITION AND CHOKE UNLOADER ADJUSTMENTS MUST ALSO BE RESET.

7. CHOKE DIAPHRAGM CONNECTOR ROD ADJUSTMENT

.040″ TQ-9372S



(1) Be sure diaphragm is securely mounted on carburetor. Apply a vacuum of 15 or more inches of Hg to diaphragm to fully depress diaphragm stem.

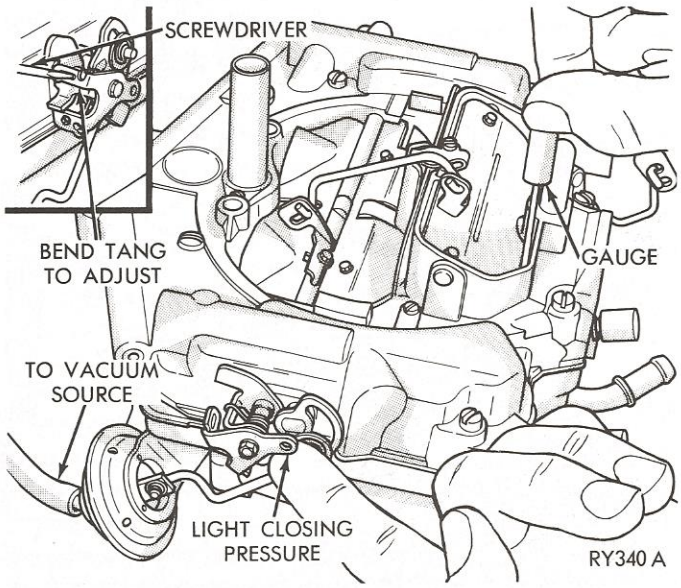
(2) With light opening pressure on air valve adjust connector rod to give specified clearance between air valve and stop.

IF CHOKE DIAPHRAGM CONNECTOR ROD ADJUSTMENT IS CHANGED, THE VACUUM KICK ADJUSTMENT MUST ALSO BE RESET.

8. CHOKE VACUUM KICK ADJUSTMENT

.130″ TQ-9372S

measure at the lowest edge of the choke valve (throttle lever side).



(1) Open throttle, close choke then close throttle to trap fast idle cam at closed choke position.

(2) Disconnect vacuum hose from carburetor and connect to hose of auxiliary vacuum source with small length of tube. Apply a vacuum of 15 or more inches of mercury.

(3) Apply sufficient closing pressure on choke control lever to move kick adjustment tang against its stop without distorting linkage. Note: a relatively weak torsion spring within the lever system can be deflected easily. The vacuum kick adjustment tang must be at the stop for proper measurements.

(4) Measure by inserting specified gauge between bottom of choke valve and air horn wall at throttle lever side. **CAUTION: Do not change position of choke with gauge during measurement.**

(5) Adjust by twisting screwdriver in tang slot. **Do not adjust diaphragm rod.**

(6) Check for free movement between open and adjusted positions. Correct any misalignment or interference and repeat adjustment if necessary.

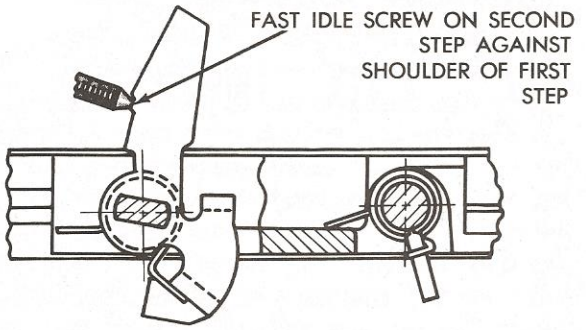
(7) Replace vacuum hose on correct carburetor fitting.

13. FAST IDLE SPEED ADJUSTMENT

This procedure is to be performed only after the Solenoid Idle Stop and Idle Set RPM Adjustment Procedures.

1400 RPM TQ-9372

On a new vehicle (under 300 miles/500km), reduce rpm settings by 75 RPM.



PB560B

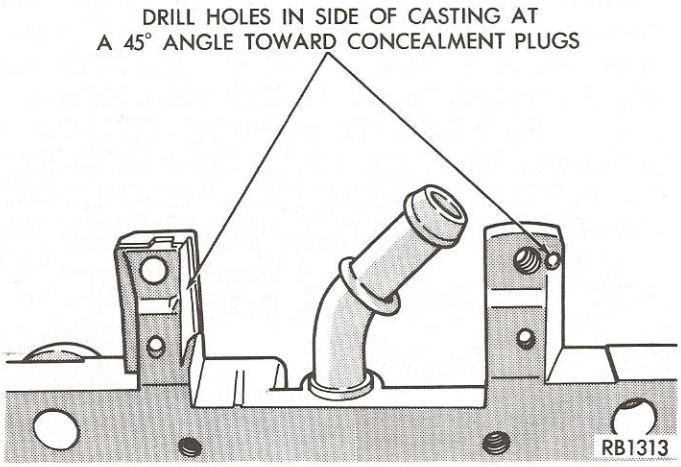
(1) Open the throttle slightly and place the fast idle adjusting screw on the second highest step of the fast idle cam.

(2) With the choke fully open, turn the fast idle adjusting screw until the correct fast idle rpm is obtained.

(3) Return to idle then reposition the fast idle adjusting screw on the second highest step of the fast idle cam to verify fast idle speed. Readjust if necessary.

(4) Return to idle and turn engine off. Unplug and reconnect the vacuum hoses at the EGR valve and canister and remove all ground jumper wires. Reconnect O^2 sensor wire. Reconnect vacuum line on SCC. **Idle speed with the engine in normal operating condition (everything connected) may vary from set speeds. DO NOT READJUST.**

14. CONCEALMENT PLUG REMOVAL



(1) Remove carburetor from engine.

(2) Place the carburetor in a vise with the concealment plugs facing up and the gasket surfaces protected from the vise jaws.

(3) Drill a 5/64 inch pilot hole at a 45° angle towards concealment plugs as shown in illustration.

(4) Redrill hole to 1/8 inch.

(5) Install a blunt punch into the hole and drive out the plug. Repeat procedure on the opposite side.

(6) Reinstall the carburetor on the engine. The carburetor does not have to be removed to install new concealment plugs.

(7) Proceed to propane assisted idle set procedure.

15. PROPANE ASSISTED IDLE SET PROCEDURE

Idle Set RPM	Propane RPM
650 RPM TQ-9372S	775 RPM TQ-9372S

On a new vehicle (under 300 miles/500km), reduce rpm settings by 75 RPM.

Tampering with the carburetor is a violation of Federal law. Adjustments of the carburetor air fuel mixture can only be done under certain circumstances, as explained below. Upon completion of the carburetor adjustment, the concealment plug must be reinstalled.

This procedure should only be used if an idle defect still exists after normal diagnosis has revealed no other faulty condition such as, incorrect basic timing, incorrect idle speed, faulty wire or hose connections, etc. Also it is important to make sure the combustion computer systems are operating properly. Adjustment of the carburetor air fuel mixture should be performed after a major carburetor overhaul.

(1) Remove concealment plug. Set the parking brake and place the transmission in neutral. Turn off all lights and accessories. Connect a tachometer to the engine. Start the engine and allow it to warm up on the second highest step of the fast idle cam until normal operating temperature is reached. Return engine to idle.

(2) Disconnect and plug the vacuum hose at the EGR valve. Connect a jumper wire between the carburetor switch and a good ground.

(3) Remove the bowl vent vacuum hose from the carburetor nipple. Install a "T" fitting between the nipple and the vacuum hose. Install the propane supply hose to the "T".

(4) With the bottle upright and in a safe location, remove the PCV valve from the cylinder head cover and allow the valve to draw underhood air. Disconnect and plug the 3/16 inch diameter control hose at the canister.

(5) Disconnect the engine harness lead from the O^2 sensor and ground the engine harness lead.

CAUTION: Care should be exercised so that no pulling force is put on the wire attached to the O^2 sensor. The "bullet" connector to be disconnected is approximately 4 inches from the sensor. Use care in working around the sensor as the exhaust manifold is extremely hot.

Remove and plug vacuum line at vacuum transducer on SCC. Connect an auxiliary vacuum supply to vacuum transducer and set at 16 inch of vacuum.

(6) Allow the engine to run for two minutes to allow the effect of disconnecting the O^2 sensor to take place. Open propane main valve.

(7) Slowly open propane metering valve until maximum engine rpm is reached. When too much propane is added, engine rpm will decrease. "Fine tune" the metering valve to obtain the highest rpm.

(8) With propane still flowing, adjust the idle speed screw on the solenoid to achieve the specified propane rpm. Again, "fine tune" the metering valve to obtain the highest engine rpm. If there has been a change in the maximum rpm, readjust the idle speed screw on the solenoid to the specified propane rpm.

(9) Turn off propane main valve and allow the engine speed to stabilize. Slowly adjust the mixture screws by equal amounts, pausing between adjustments to allow engine speed to stabilize, to achieve the smoothest idle at the specified idle set rpm.

(10) Turn on propane main valve. "Fine tune" metering valve to obtain the highest engine rpm. If the maximum speed is more than 25 rpm different than the specified propane rpm, repeat steps 7 through 9.

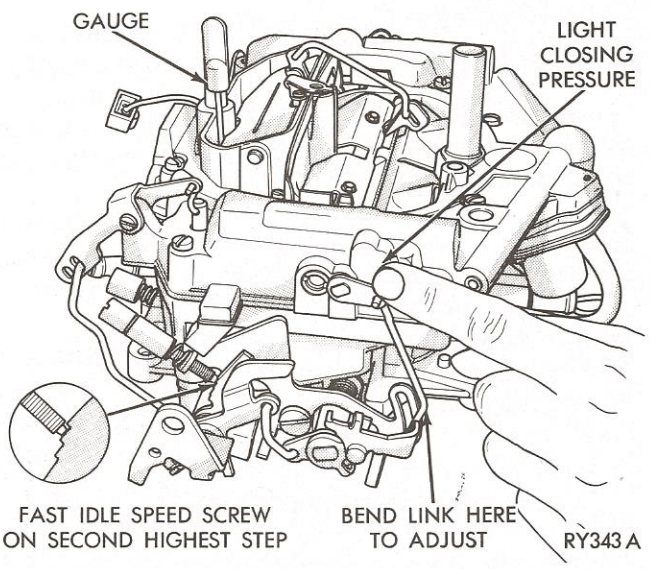
(11) Turn off propane main and metering valves. Remove the propane supply hose and "T". Remove the O^2 sensor ground wire and reconnect the O^2 sensor. Reinstall the PCV valve. Reinstall new concealment plugs. Reconnect vacuum line on SCC.

(12) Perform the Solenoid Idle Stop, Idle Set RPM, and Fast Idle Speed Adjustments.

16. FAST IDLE CAM POSITION ADJUSTMENT

.100″ TQ-9372S

measure at the lowest edge of the choke valve (throttle lever side)



(1) With fast idle speed adjusting screw contacting second highest speed step on fast idle cam, move choke valve towards closed position with light pressure on fast idle control lever.

(2) Measure by inserting specified gauge between bottom of choke valve and air horn wall at throttle lever side.

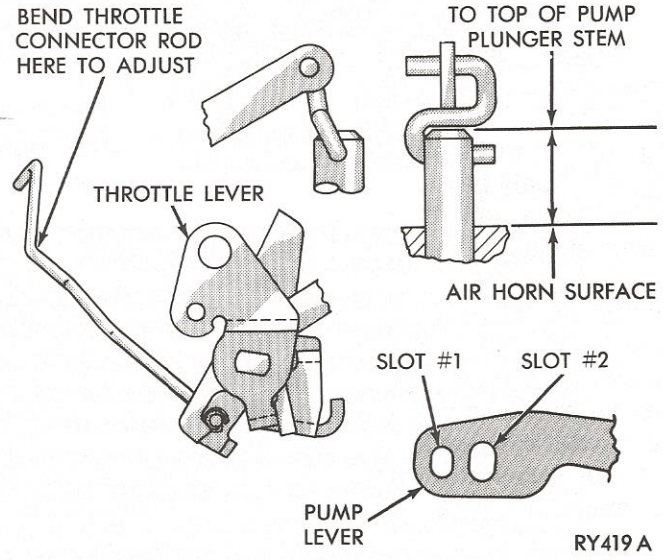
CAUTION: Do not change position of choke with gauge during measurement.

(3) Adjust by bending fast idle connector rod at angle until correct valve opening has been obtained.

IF FAST IDLE CAM POSITION ADJUSTMENT IS CHANGED THE CHOKE UNLOADER AND SECONDARY THROTTLE LOCKOUT ADJUSTMENTS MUST BE RESET.

17. ACCELERATOR PUMP STROKE ADJUSTMENT

33/64″ 25/64″ TQ-9372S
Slot #2



Accelerator pump stroke is determined by measurement of the accelerator pump plunger height above the air horn surface at curb idle.

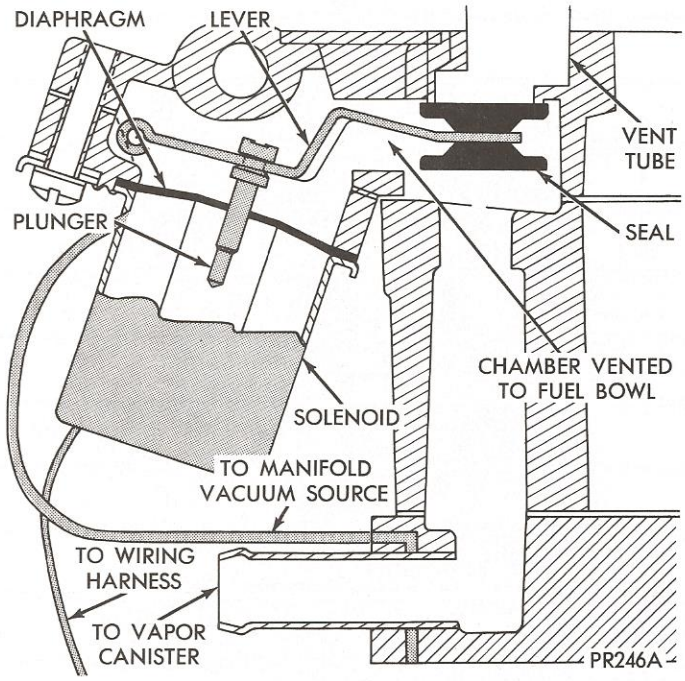
(1) Be sure throttle connector rod is in the specified hole of the pump arm.

(2) Use a scale to measure height of accelerator pump plunger stem (top) **at curb idle.** Pump heights are shown in specifications.

(3) Adjust plunger height by bending the throttle connector rod in the proper area.

18. SOLENOID BOWL VENT VALVE

refer to procedure below — TQ-9372S



(1) Remove air cleaner.

(2) Disconnect hose to solenoid bowl vent diaphragm.

(3) Connect auxiliary vacuum source and observe valve movement, by looking down through the air horn vent tube, when 15 or more inches of mercury is applied.

(4) Turn ignition switch on and disconnect auxiliary vacuum source. Valve should remain in the down position until ignition switch is turned off.

(5) If the valve does not move when vacuum is applied to diaphragm, the diaphragm is leaking and the assembly must be replaced. If the valve does not remain in the down position when the ignition switch is turned on and the vacuum source is removed, the solenoid or related wiring is defective.

(6) Install air cleaner.

Chrysler Number	4179179
Carter Carburetor Number	TQ
Carter Model Number	TQ-9372S
Requirement	Federal
Engine Cubic Inch/Litre	318/5.2
Transmission	Automatic
Bore	
Primary	1.38″
Secondary	2.25″
Main Venturi	
Primary	1.06″
Secondary	2.25″
Adjustments	
Float Setting ± 1/32″	29/32″
Secondary Throttle Linkage	**
Secondary Air Valve Opening	.500″
Secondary Air Valve Spring Tension (From Contact)	1-3/4 Turns
Choke Control Lever Adjustment Off Vehicle	3.375
Choke Diaphragm Connector Rod (Clearance Between Air Valve and Stop)	.040″
Vacuum Kick*	.130″
Choke Unloader*	.312″
Secondary Throttle Lockout	.060″ to .090″
Fast Idle Cam Position*	.100″ Slot #2
Accelerator Pump Stroke (Top of Pump Plunger Stem To Top Of Bowl Cover At Curb Idle)	33/64″ 25/64″
Timing	16°BTDC
Propane RPM	775
Idle Set RPM	650
Solenoid Idle Stop	850
Fast Idle RPM	1400

Reduce Propane, Idle Set And Fast Idle Speeds By 75 RPM For New Vehicles (Under 300 Miles/500 km)

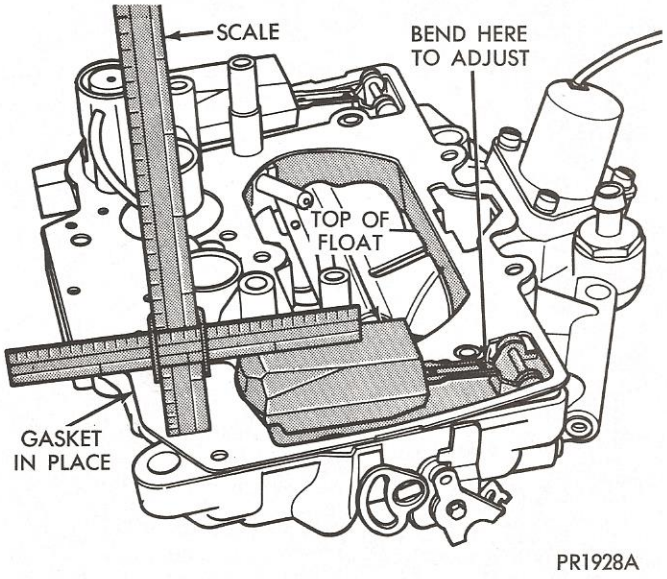
*Thermo-Quad Choke Adjustments Are Measured At The Lowest Edge Of The Choke Plate.

**Adjust Links So That Primary And Secondary Stops Both Contact At The Same Time.

THERMO-QUAD CARBURETOR ADJUSTMENT

1. FLOAT SETTING ADJUSTMENT

29/32″ (± 1/32″)	TQ-9342S TQ-9375S TQ-9376S TQ-9379S



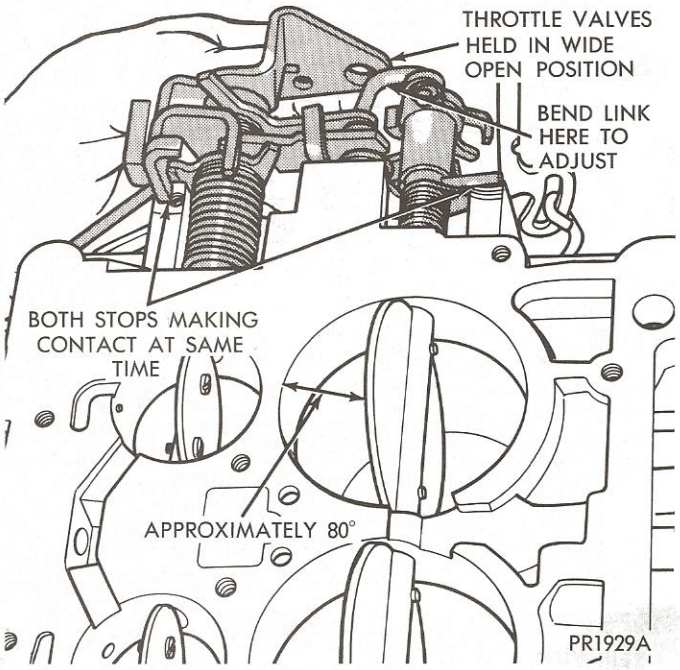
(1) Invert bowl cover.

(2) Install bowl cover gasket and with floats resting on seated needle the dimension of each float from bowl cover gasket to bottom side of float should be as indicated.

(3) If adjustment is necessary bend lever as shown above. **Never allow lip of float lever to be pressed against needle when adjusting.**

2. SECONDARY THROTTLE LINKAGE ADJUSTMENT

adjust link so that primary and secondary levers both contact stops at the same time	TQ-9342S TQ-9375S TQ-9376S TQ-9379S



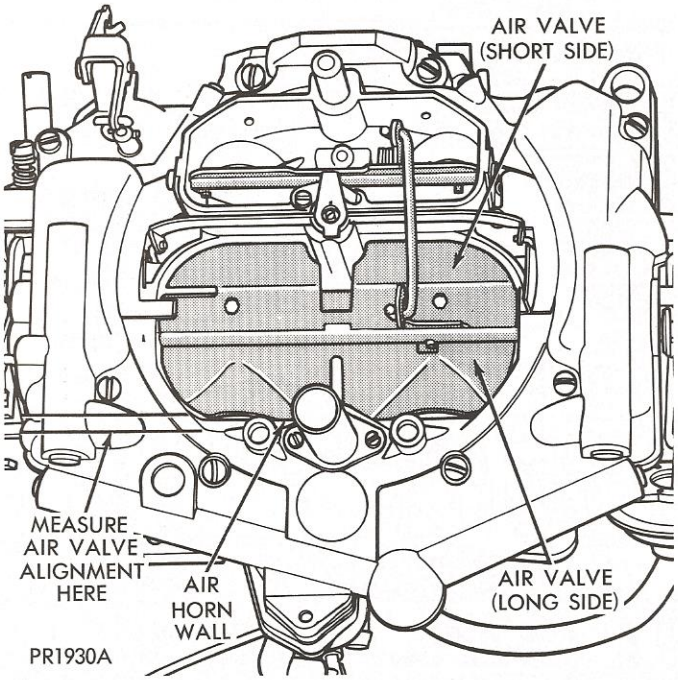
(1) Hold fast idle lever in curb idle position and invert carburetor.

(2) Open throttle valves to the wide open position. The primary and secondary levers should both contact stops at the same time.

(3) If an adjustment is necessary, bend secondary throttle operating rod at angle using pliers, until correct adjustment has been obtained.

3. SECONDARY AIR VALVE ALIGNMENT

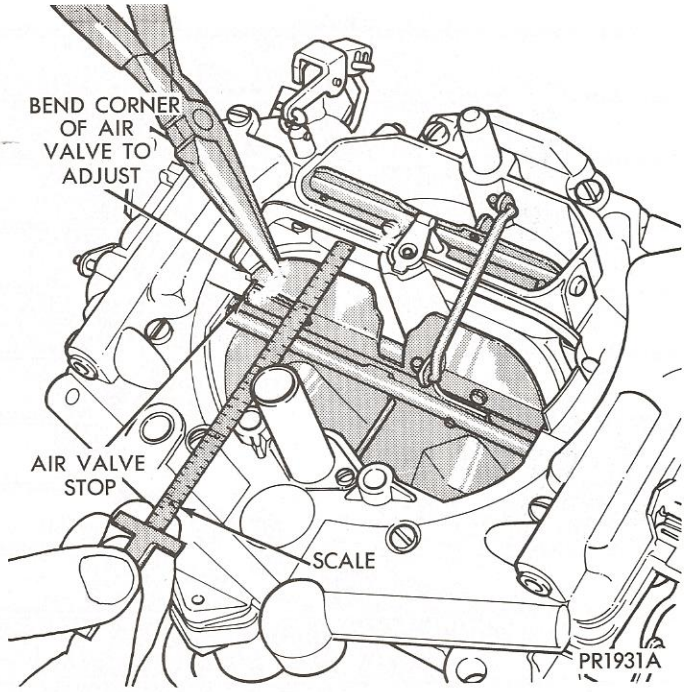
refer to procedure below	TQ-9342S TQ-9375S TQ-9376S TQ-9379S



(1) With air valve in closed position the opening between the air valve and air horn wall at the long side must be at its maximum and parallel with air horn gasket surface.

4. SECONDARY AIR VALVE OPENING ADJUSTMENT

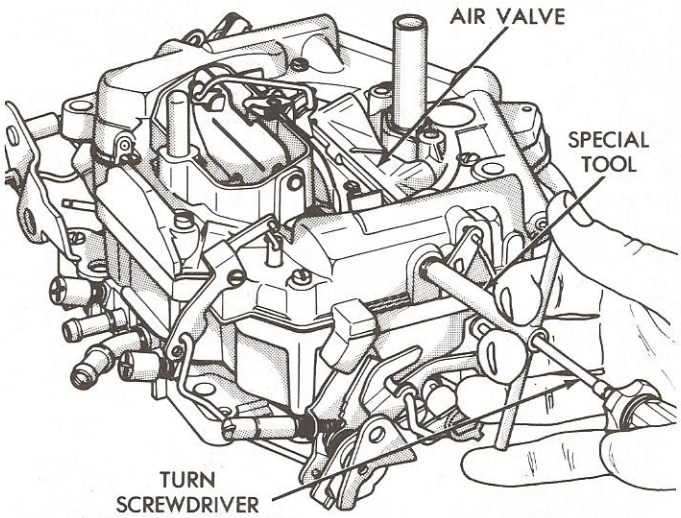
7/16″	TQ-9375S TQ-9376S TQ-9379S	27/64″	TQ-9342S



(1) With air valve in wide open position, the opening of the air valve at the short side and air horn should be as shown in Specifications. The corner of air valve is notched for adjustment. Bend the corner with a pair of pliers to give proper opening.

5. SECONDARY AIR VALVE SPRING TENSION ADJUSTMENT

2 turns from contact	TQ-9375S TQ-9376S TQ-9379S
2-1/2 turns from contact	TQ-9342S



RY337A

(1) Hold air valve adjustment plug with screwdriver when loosening lock plug or the spring may snap out of position requiring disassembly of the carburetor to retrieve the spring.

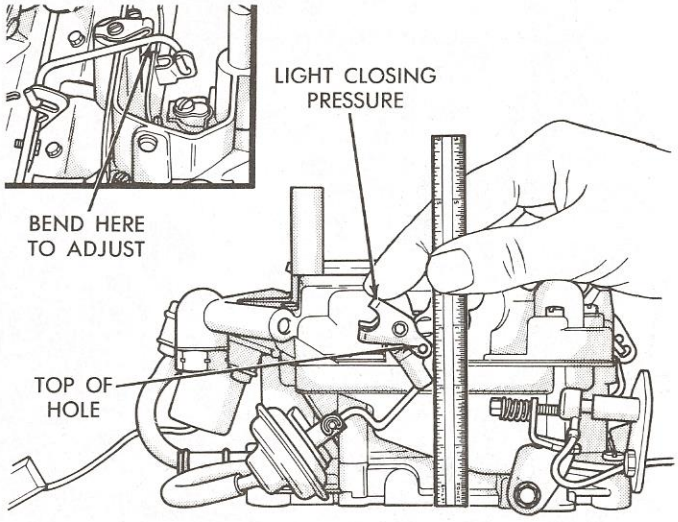
(2) Loosen air valve lock plug and turn air valve adjustment plug clockwise to allow air valve to position itself to wide open position.

(3) With a long screwdriver that will enter center of Tool C-4152-B positioned on air valve adjustment plug, turn plug **counterclockwise** until air valve contacts stop, lightly test with finger, then an additional turn (refer to specifications).

(4) Hold adjustment plug with screwdriver, and tighten lock plug securely with Tool C-4152-B. Be sure adjustment does not move. Check air valve for freedom of movement.

6. CHOKE CONTROL LEVER ADJUSTMENT

3-3/8" **off vehicle**	TQ-9342S TQ-9375S TQ-9376S TQ-9379S



RY338 A

(1) Remove tamper resistant cover by drilling out two blind rivets.

(2) Place carburetor on flat object with surface flush against bottom of flange and extending out under choke control lever.

(3) Close choke by pushing on choke lever with throttle partly open.

(4) Measure vertical distance from top of rod hole in control lever down to flat surface simulating carburetor bottom.

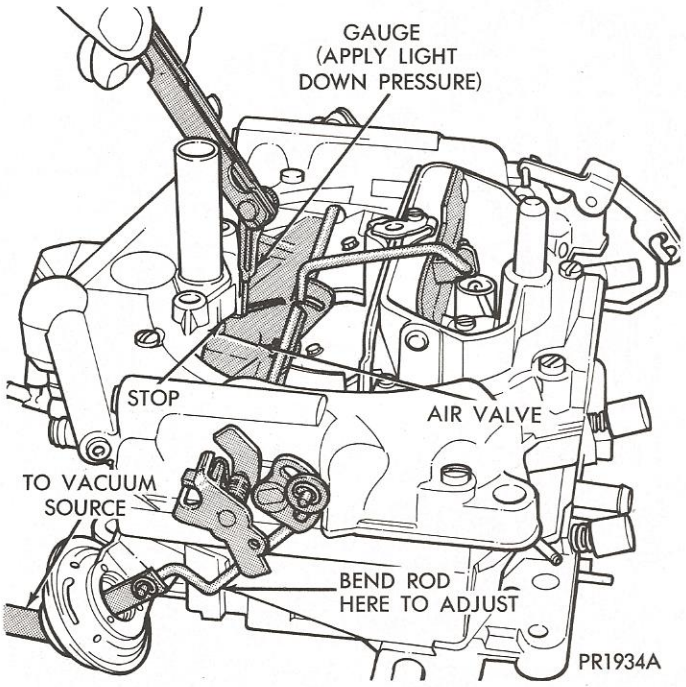
(5) Scale should read 3-3/8 inches.

(6) Adjust by bending the link connecting the two choke shafts as indicated on heavy duty cycle models. **IF CHOKE CONTROL LEVER ADJUSTMENT IS CHANGED THE VACUUM KICK, FAST IDLE CAM POSITION AND CHOKE UNLOADER ADJUSTMENTS MUST ALSO BE RESET.**

On light duty cycle models, loosen lever mounting screw (left hand thread) and rotate lever to correct position.

7. CHOKE DIAPHRAGM CONNECTOR ROD ADJUSTMENT

.040" TQ-9342S
TQ-9375S
TQ-9376S
TQ-9379S



(1) Be sure diaphragm is securely mounted on carburetor. Apply a vacuum of 15 or more inches of Hg to diaphragm to fully depress diaphragm stem.

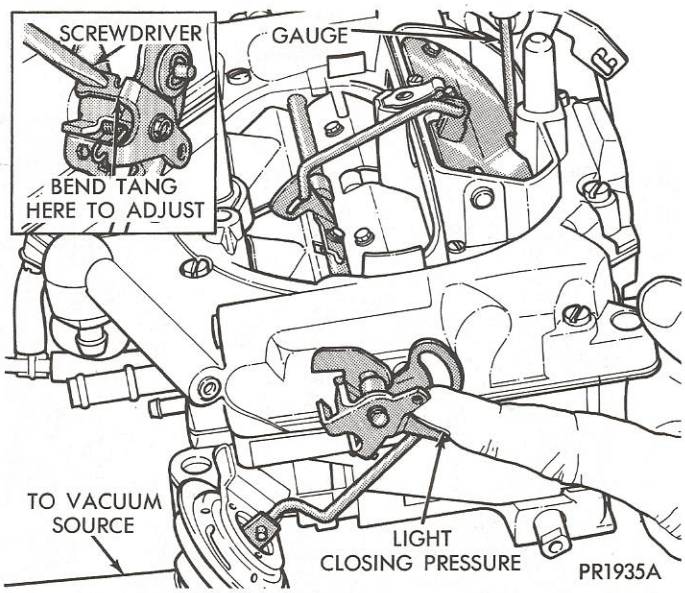
(2) With light opening pressure on air valve adjust connector rod to give specified clearance between air valve and stop.

IF CHOKE DIAPHRAGM CONNECTOR ROD ADJUSTMENT IS CHANGED, THE VACUUM KICK ADJUSTMENT MUST ALSO BE RESET.

8. CHOKE VACUUM KICK ADJUSTMENT

.130" TQ-9342S
TQ-9375S
TQ-9376S
TQ-9379S

measure at the lowest edge of the choke valve (throttle lever side).



(1) Open throttle, close choke then close throttle to trap fast idle cam at closed choke position.

(2) Disconnect vacuum hose from carburetor and connect to hose of auxiliary vacuum source with small length of tube. Apply a vacuum of 15 or more inches of mercury.

(3) Apply sufficient closing pressure on choke control lever to move kick adjustment tang against its stop without distorting linkage. Note: a relatively weak torsion spring within the lever system can be deflected easily. The vacuum kick adjustment tang must be at the stop for proper measurements.

(4) Measure by inserting specified gauge between bottom of choke valve and air horn wall at throttle lever side. **CAUTION: Do not change position of choke with gauge during measurement.**

(5) Adjust by twisting screwdriver in tang slot. **Do not adjust diaphragm rod.**

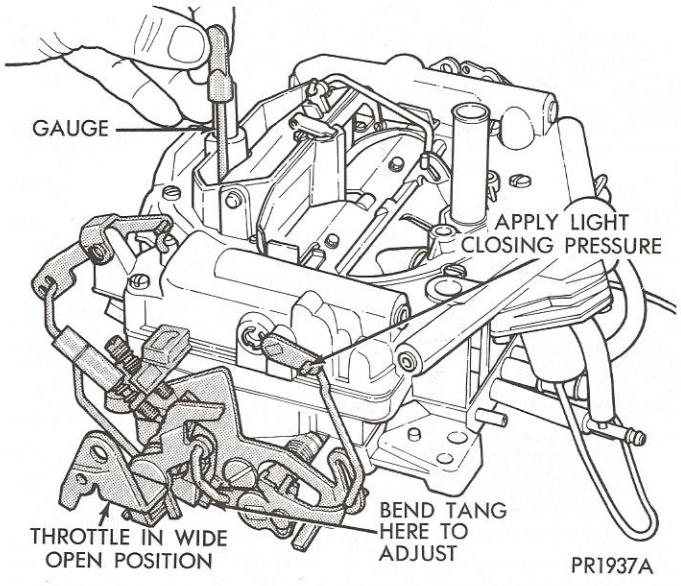
(6) Check for free movement between open and adjusted positions. Correct any misalignment or interference and repeat adjustment if necessary.

(7) Replace vacuum hose on correct carburetor fitting.

(8) Reinstall tamper resistant cover using new blind rivets.

9. CHOKE UNLOADER ADJUSTMENT

.310" measure at the lowest edge of the choke valve (throttle lever side)	TQ-9342S TQ-9375S TQ-9376S TQ-9379S



(1) Hold throttle valves in wide open position.

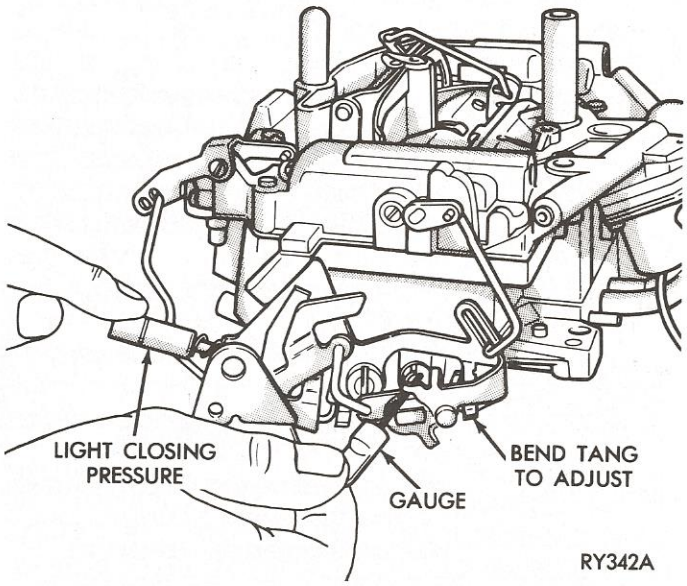
(2) Lightly press finger against fast idle control lever to move choke valve toward closed position.

(3) Measure by inserting specified gauge between bottom of choke valve and air horn wall at throttle lever side. **CAUTION: Do not change position of choke with gauge during measurement.**

(4) Adjust by bending tang on fast idle lever until correct opening has been obtained.

10. SECONDARY THROTTLE LOCKOUT ADJUSTMENT

.060"	TQ-9342S TQ-9375S TQ-9376S TQ-9379S



(1) Move fast idle control lever to open choke position.

(2) Measure clearance between lockout lever and stop. It should be as shown in specifications.

(3) Bend tang on fast idle control lever to provide proper clearance.

11. IDLE SET RPM ADJUSTMENT

Before checking or adjusting any idle speed, check ignition timing and adjust if necessary. Ground the carburetor switch. Disconnect and plug the vacuum hose at the EGR valve. Disconnect and plug the vacuum hose from the carburetor at the heated air temperature sensor and, if so equipped, at the OSAC valve. Remove the air cleaner and plug the 3/16 inch diameter control hose at the canister. Remove the PCV valve from the cylinder head cover and allow the valve to draw underhood air.

700 RPM	TQ-9379S
750 RPM	TQ-9342S
	TQ-9375S
	TQ-9376S

On a new vehicle (under 300 miles/500km), reduce rpm settings by 75 rpm.

(1) Allow one minute for the engine speed to stabilize then check engine rpm.

(2) If rpm is not correct, turn the idle set screw to obtain the proper idle set rpm.

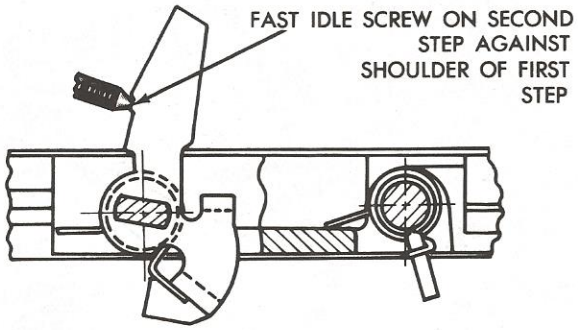
(3) Proceed to the Fast Idle Speed Adjustment Procedure.

12. FAST IDLE SPEED ADJUSTMENT

This adjustment is to be performed only after the Idle Set RPM Adjustment Procedure has been performed.

1500 RPM	TQ-9379S
1600 RPM	TQ-9342S
1700 RPM	TQ-9376S
1800 RPM	TQ-9375S

On a new vehicle (under 300 miles/500km), reduce rpm settings by 75 rpm.



PB560B

(1) Open the throttle and place the fast idle adjustment screw on the second highest step of the fast idle cam.

(2) With the choke fully open, turn the fast idle screw to obtain the proper fast idle rpm.

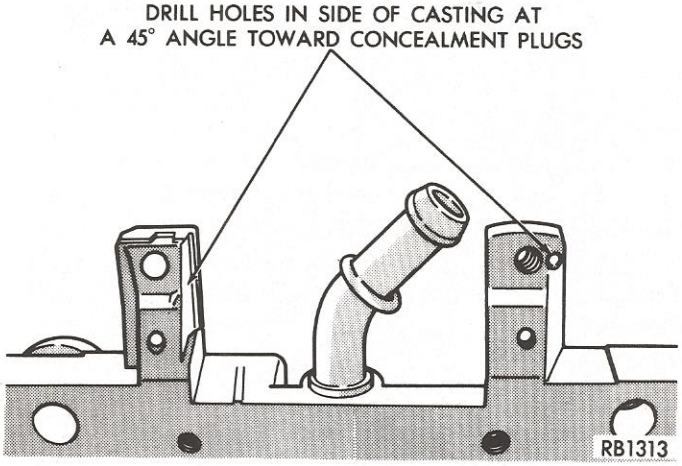
(3) Return the engine to idle and reposition the fast idle adjusting screw on the second highest step of the fast idle cam to verify fast idle speed. Readjust if necessary.

(4) Return to idle then turn the engine off. Unplug and reconnect the vacuum hoses at the EGR valve and canister.

(5) Reinstall the air cleaner and unplug and reconnect the vacuum hose to the heated air temperature sensor and, if disconnected, to the OSAC valve on the air cleaner. Remove the tachometer and reinstall the PCV valve. Remove carburetor ground wire.

Idle speeds with the engine in normal operating condition (all hoses and wires connected) may vary from set speeds. DO NOT READJUST.

13. CONCEALMENT PLUG REMOVAL



(1) Remove the carburetor from the engine.

(2) Place the carburetor in a vise with the concealment plugs facing up and the gasket surfaces protected from the vise jaws.

(3) Drill a 5/64 inch diameter pilot hole at a 45° angle into the casting toward the concealment plugs as shown in the illustration.

(4) Redrill the hole to 1/8 inch.

(5) Install a blunt punch into the hole and drive out the concealment plug. Repeat the procedure on the opposite side.

(6) Reinstall the carburetor on the engine. The carburetor will not have to be removed to install new concealment plugs.

(7) Proceed to the Propane Assisted Idle Set Procedure.

14. PROPANE ASSISTED IDLE SET PROCEDURE

Idle Set RPM		Propane RPM	
700 RPM	TQ-9379S	800 RPM	TQ-9379S
750 RPM	TQ-9375S	810 RPM	TQ-9375S
750 RPM	TQ-9376S	800 RPM	TQ-9376S
750 RPM	TQ-9342S	840 RPM	TQ-9342S

On a new vehicle (under 300 miles/500km), reduce rpm settings by 75 rpm.

Tampering with the carburetor is a violation of Federal law. Adjustment of the carburetor idle air fuel mixture can only be done under certain circumstances as explained below. Upon completion of the carburetor adjustments, the concealment plugs must be replaced.

This procedure should only be used if an idle defect still exists if normal diagnosis as incorrect idle speed, incorrect basic timing, faulty hose or wire connections, etc.

Adjustment of the carburetor idle air fuel mixture should be performed after a major carburetor overhaul.

(1) Remove the concealment plugs. Set the parking brake and place the transmission in neutral. Turn all lights and accessories off. Connect a tachometer to the engine. Start the engine and allow it to warm up on the second highest step of the fast idle cam until normal operating temperature is reached then return the engine to idle. Ground the carburetor switch.

(2) Disconnect and plug the vacuum hoses at the EGR valve, the distributor, and from the carburetor to the heated air temperature sensor at the air cleaner and, if so equipped, at the OSAC valve. Remove the air cleaner.

(3) Remove the bowl vent vacuum hose from the carburetor nipple. Install a tee fitting between the nipple and the vacuum hose. Install the propane supply hose to the tee.

(4) With the propane bottle upright and in a safe location, remove the PCV valve from the cylinder head cover and allow the valve to draw underhood air. Disconnect and plug the 3/16 inch diameter control hose from the canister.

(5) Open the propane main valve. Slowly open the propane metering valve until maximum engine rpm is reached. When too much propane is added, engine rpm will decrease, so the metering valve must be "fine tuned" to obtain the highest engine rpm.

(6) With the propane still flowing, adjust the idle speed screw to obtain the specified propane rpm. "Fine tune" the metering valve again to obtain the highest engine rpm. If there has been a change in the maximum rpm, readjust the idle speed screw to the specified propane rpm.

(7) Turn off the propane main valve and allow the

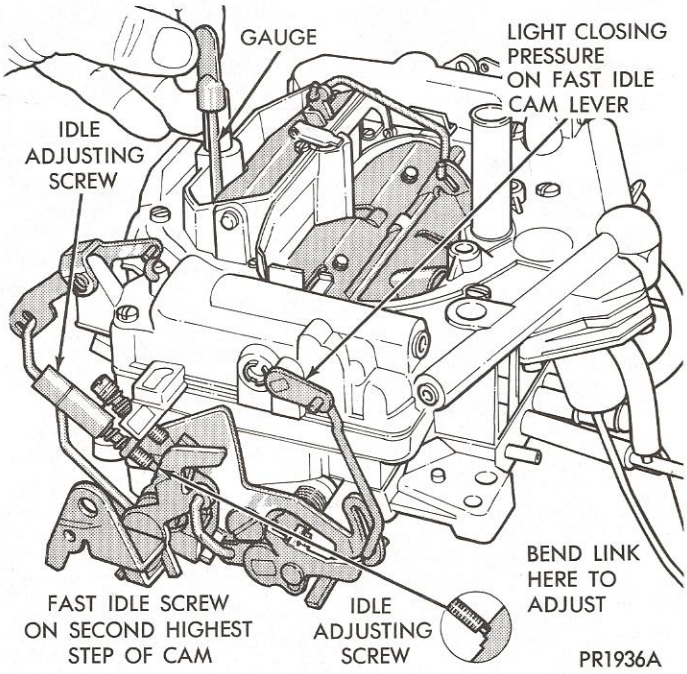
engine speed to stabilize. Adjust the idle mixture screws 1/16 turn at a time, waiting 30 seconds between adjustments, until the smoothest idle at the specified idle set rpm is reached.

(8) Turn on the propane main valve. "Fine tune" the metering valve to obtain the highest rpm. If the maximum engine rpm is more than 25 rpm different than the specified propane rpm, repeat steps (5) through (7).

(9) Turn off the propane main valve and metering valve. Remove the propane supply hose and tee and reconnect the bowl vent vacuum hose. Install new concealment plugs and perform the Idle Set RPM and Fast Idle Speed Adjustment procedures.

15. FAST IDLE CAM POSITION ADJUSTMENT

.100" measure at the lowest edge of the choke valve (throttle lever side)	TQ-9342S
.130"	TQ-9375S TQ-9376S TQ-9379S



(1) With fast idle speed adjusting screw contacting second highest speed step on fast idle cam, move choke valve towards closed position with light pressure on fast idle control lever.

(2) Measure by inserting specified gauge between bottom of choke valve and air horn wall at throttle lever side.

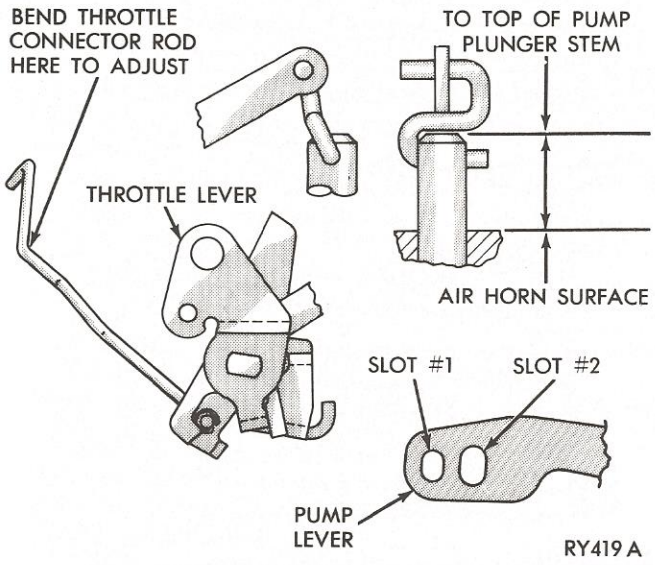
CAUTION: Do not change position of choke with gauge during measurement.

(3) Adjust by bending fast idle connector rod at angle until correct valve opening has been obtained.

IF FAST IDLE CAM POSITION ADJUSTMENT IS CHANGED THE CHOKE UNLOADER AND SECONDARY THROTTLE LOCKOUT ADJUSTMENTS MUST BE RESET.

16. ACCELERATOR PUMP STROKE ADJUSTMENT

.340″ Position #1	TQ-9342S TQ-9375S TQ-9376S TQ-9379S



Accelerator pump stroke is determined by measurement of the accelerator pump plunger height above the air horn surface at curb idle.

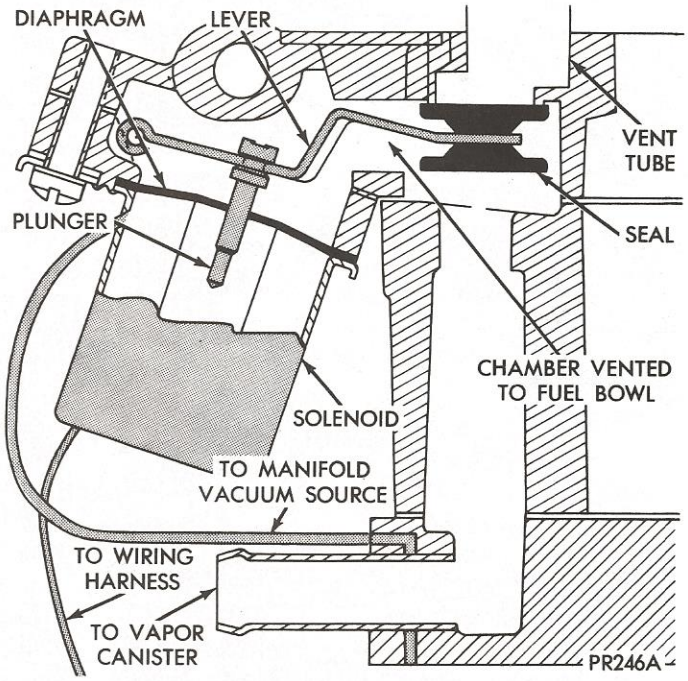
(1) Be sure throttle connector rod is in the specified hole of the pump arm.

(2) Use a scale to measure height of accelerator pump plunger stem (top) **at curb idle.** Pump heights are shown in specifications.

(3) Adjust plunger height by bending the throttle connector rod in the proper area.

17. SOLENOID BOWL VENT VALVE

refer to procedure below	TQ-9342S TQ-9375S TQ-9376S TQ-9379S



(1) Remove air cleaner.

(2) Disconnect hose to solenoid bowl vent diaphragm.

(3) Connect auxiliary vacuum source and observe valve movement, by looking down through the air horn vent tube, when 15 or more inches of mercury is applied.

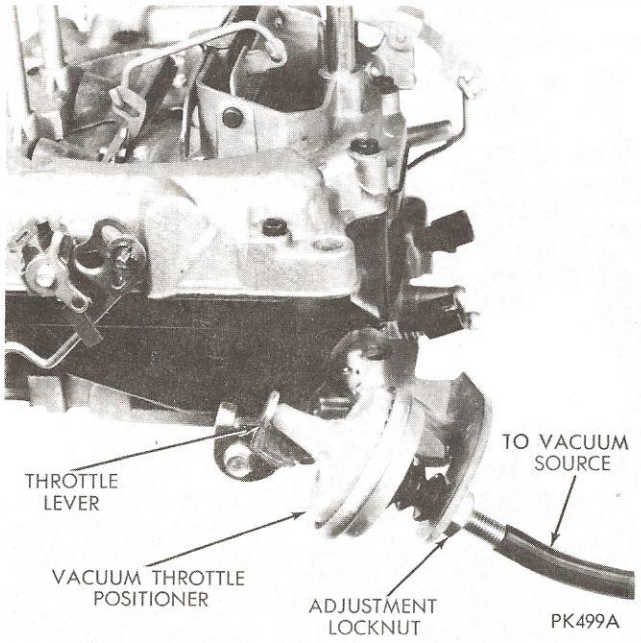
(4) Turn ignition switch on and disconnect auxiliary vacuum source. Valve should remain in the down position until ignition switch is turned off.

(5) If the valve does not move when vacuum is applied to diaphragm, the diaphragm is leaking and the assembly must be replaced. If the valve does not remain in the down position when the ignition switch is turned on and the vacuum source is removed, the solenoid or related wiring is defective.

(6) Install air cleaner.

18. VACUUM THROTTLE POSITIONER ADJUSTMENT

TQ-9375S
TQ-9376S
TQ-9379S



(1) Start the engine and allow it to idle in neutral, then accelerate the engine to a speed above 2000 rpm. Verify that the vacuum positioner unit operates and can withstand a hand applied load in the operating position. If the operation is not proper, determine the cause of failure before proceeding using the diagnosis procedure shown at the front of this group, then proceed with the adjustment.

(2) Accelerate the engine manually to 2000 rpm.

(3) Loosen the positioner adjustment lock nut and rotate the complete vacuum positioner assembly until the positioner just contacts the throttle lever.

(4) Release the throttle, then slowly adjust the positioner to decrease engine speed until a sudden drop in engine speed (at least 1000 rpm) occurs. At this point, continue adjusting positioner in the decreasing rpm direction 1/4 additional turn and tighten the lock nut. Accelerate the engine manually to approximately 2300 rpm and release the throttle. The engine should return to normal idle.

19. DASHPOT ADJUSTMENT

With the idle set speed and mixture properly set and a tachometer installed, start the engine and position the throttle lever so that the actuating tab on the lever is contacting the stem of the dashpot but not depressing it. Allow 30 seconds for engine to stabilize. The tachometer should read 2300 rpm with throttle lever in this position.

To adjust setting, loosen the lock nut and screw the dashpot in or out, as required. When the desired setting is obtained, tighten the lock nut on the dashpot against the bracket. Check to make sure throttle lever returns to idle condition.

THERMO-QUAD® CARBURETOR

Chrysler Number / Carter Model Number	4287013 TQ-9342S	4241752 TQ-9375S	4287016 TQ-9379S	4241753 TQ-9376S
Requirement	Fed./Cal.	Fed./Cal./Can.	Fed./Can.	Cal.
Engine Displacement (Cu. In.)	318/5.2	318/5.2	360/5.9	360/5.9
Transmission	Both	Both	Both	Both
Bore				
Primary	1-3/8″	1-3/8″	1-3/8″	1-3/8″
Secondary	2-1/4″	2-1/4″	2-1/4″	2-1/4″
Main Venturi				
Primary	1-1/16″	1-1/16″	1-1/16″	1-1/16″
Secondary	AIR VALVE			
Adjustments				
Float Setting (± 1/32″)	29/32″	29/32″	29/32″	29/32″
Secondary Throttle Linkage	Adjust links so that primary and secondary stops both contact at the same time			
Secondary Air Valve Opening	27/64″	27/64″	27/64″	27/64″
Secondary Air Valve Spring Tension (From Contact)	2-1/2 Turns	2 Turns	2 Turns	2 Turns
Accelerator Pump Stroke (Top of pump plunger stem to top of bowl cover @ curb idle) (Stage 1)	.340″	.340″	.340″	.340″
At Secondary Pick Up (Stage 2)	.190″	.190″	None	.190″
Choke Diaphragm Connector Rod (Clearance between Air Valve and Stop)	.040″	.040″	.040″	.040″
Vacuum Kick**	.130″	.130″	.130″	.130″
Fast Idle Cam Position**	.100″	.130″	.130″	.130″
Choke Unloader (Wide Open Kick)**	.310″	.310″	.310″	.310″
Secondary Throttle Lockout	.060″-.090″	.060″-.090″	.060″-.090″	.060″-.090″
Timing	16°BTDC	16°BTDC	12°BTDC	10°BTDC
Propane rpm	840	810	800	800
Idle set rpm	750	750	700	750
Fast idle rpm	1600	1800	1500	1700

**Thermo-Quad Choke Adjustments are measured at the lowest edge of the choke plate.

Reduce Propane, Idle Set and Fast Idle speeds by 75 RPM on new vehicles (under 300 miles (500 km))

DRIVEABILITY SYMPTOM DIAGNOSIS

COLD STARTING SYMPTOM

Engine cranks but will not start:

(1) Choke not closing—check binding or interferences hot and cold and with accessories on.

(2) No ignition firing.

Engine fires, runs up, then dies:

(1) Choke vacuum kick setting too wide.

(2) EGR system on at start—check CCEGR valve or CTS switch timer, and solenoid for proper operation—also EGR valve.

(3) Fast idle speed set too low or cam index incorrect.

(4) Vacuum leak.

(5) Inadequate fuel pump output.

(6) Low fuel level in carb—reset floats.

Engine dies on kickdown after start:

(1) Check vacuum kick, cam index, hot fast idle speed mis-set.

Engine fires, runs up, then idles slowly with black smoke:

(1) Choke vacuum diaphragm leaks or is not receiving vacuum signal.

(2) Choke vacuum kick setting too tight.

(3) Cam index and/or hot fast idle mis-set too low.

(4) EGR system on during warmup—check CCEGR or CTS and timer.

Engine fires, but does not run up and dies when key is released:

(1) Choke vacuum diaphragm leaks or is not receiving vacuum signal.

(2) Choke linkage binding preventing proper closing or breathing of blade.

(3) Timing mis-set.

COLD ENGINE DRIVEABILITY SYMPTOM

Engine stalls when transmission is placed in gear:

(1) Improper choke vacuum kick setting.

(2) Fast idle speed or cam index mis-set.

(3) Ignition timing—vacuum advance—OSAC.

Engine stalls, hesitates or sags during acceleration tip-ins during first mile:

(1) Choke vacuum kick setting.

(2) Exhaust Manifold Heat Control Valve stuck open.

(3) Choke control switch in high heat at low ambients.

(4) Incorrect float heights—low fuel level.

(5) EGR on during warm-up—defective CCEGR or CTS.

(6) Weak or low output, carburetor accelerator pump.

(7) Secondary lockout mis-set—4 bbl. carb.

(8) Defective OSAC—no vacuum advance.

Engine hesitates or sags, stalls after first mile of warmup:

(1) Choke control switch in high heat at lower ambients.

(2) Exhaust Manifold Heat Control Valve stuck open.

(3) Weak or poor output accelerator pump.

(4) Incorrect float heights—low fuel level.

(5) EGR on during warmup—defective CCEGR or CTS (low ambients).

(6) Ignition system—OSAC, vacuum advance, etc.

(7) Heated air inlet in cold position (Icing).

WARMED UP DRIVEABILITY SYMPTOM

Hesitation sag, stumble: (with slight accelerator pedal movement)

(1) Vacuum leak—hose off or misrouted or split.

(2) Mis-set timing or defective distributor governor or vacuum advance.

(3) Weak or defective accelerator pump in carburetor-output to only one bore results in backfire on 2- or 4-bbl. carburetor.

(4) Incorrect float height in carb—low fuel level.

(5) Sticking or binding carburetor power valve—(Holley) or metering rod carrier binding or sticking (Carter).

(6) Heated inlet air stuck in either full hot or full cold position, due to binding door hinge or faulty sensor.

(7) Carburetor transfer or idle system plugged or obstructed.

(8) Plugged or restricted OSAC giving little or no vacuum advance.

(9) Binding, bent or defective EGR valve or control system, resulting in excessive EGR rates.

Hesitation, sag, stumble: (with heavy accelerator pedal movement)

(1) Weak or defective accelerator pump.

(2) Major vacuum leak.

(3) Sticking or binding carburetor power valve or step-up rods.

(4) Mis-set basic timing or distributor governor advance faulty.

(5) Mis-set carburetor float levels—low fuel.

(6) Faulty fuel pump—obstructed lines or filter.

(7) Binding or bent carburetor float arms—inadequate fuel.

(8) Mis-set air valve spring tension on 4-bbl. carburetors causing premature opening.

Surge at constant speed:

Low Speed

(1) Vacuum leak—hoses off.

(2) Mis-set timing—failed vacuum advance.

(3) Defective OSAC—plugged or restricted giving no vacuum advance.

(4) Partially plugged idle or transfer system in carb—including mis-set idle.

(5) Incorrect float setting—low fuel level.

(6) Defective PCV—stuck in high flow position.

(7) Heated air system stuck in cold position at low ambient.

High Speed

(1) Incorrect spark advance—defective distributor or OSAC valve plugged.

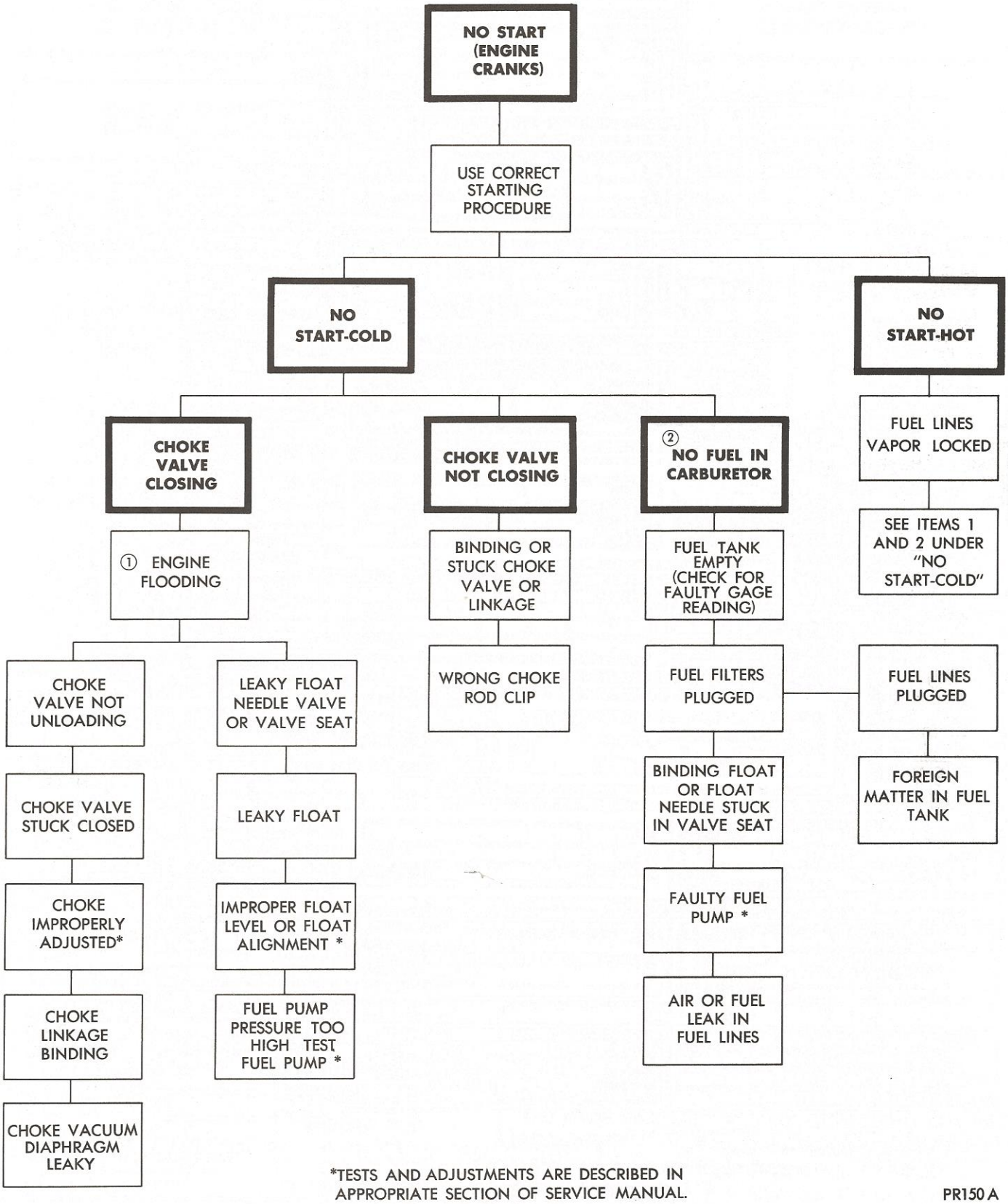
(2) Major vacuum leak.

(3) Defective or sticking gradient power valve (Holley Carb).

(4) Incorrect float setting—low fuel level.

(5) Restricted fuel supply.

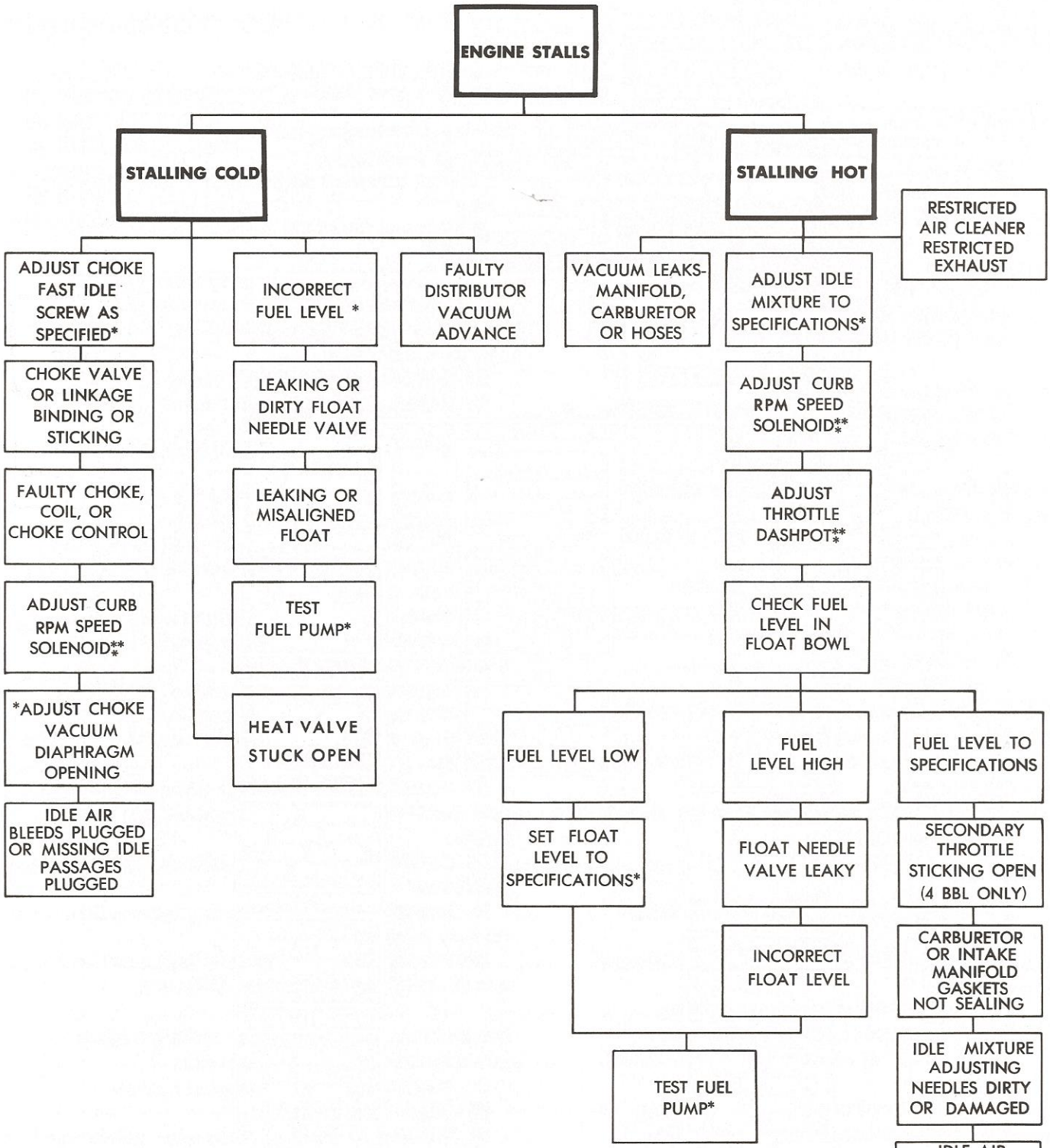
FUEL SYSTEM DIAGNOSIS PART 1



*TESTS AND ADJUSTMENTS ARE DESCRIBED IN APPROPRIATE SECTION OF SERVICE MANUAL.

PR150 A

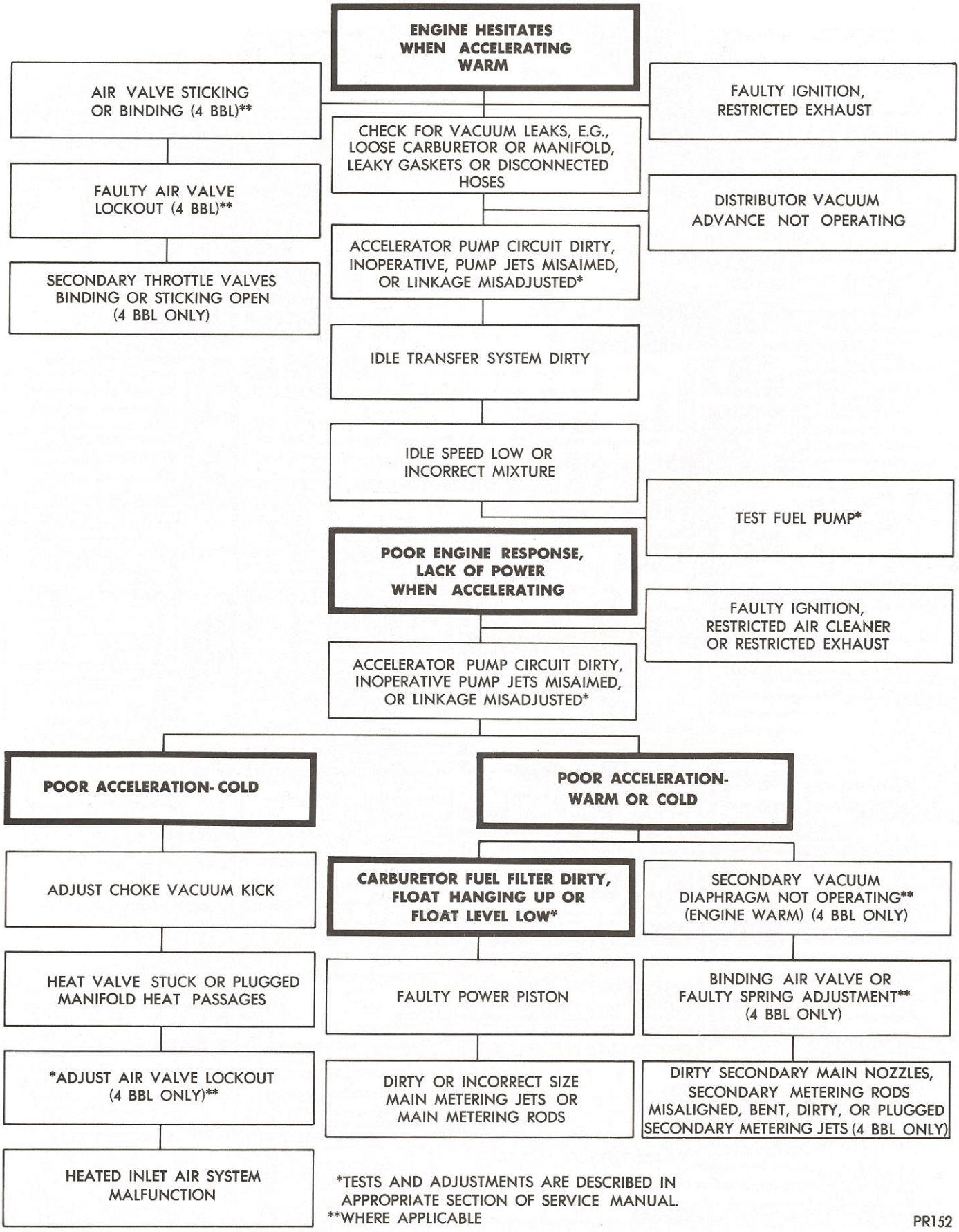
FUEL SYSTEM DIAGNOSIS PART 2



*TESTS AND ADJUSTMENTS ARE DESCRIBED IN APPROPRIATE SECTION OF THE SERVICE MANUAL
**WHERE APPLICABLE

PR151A

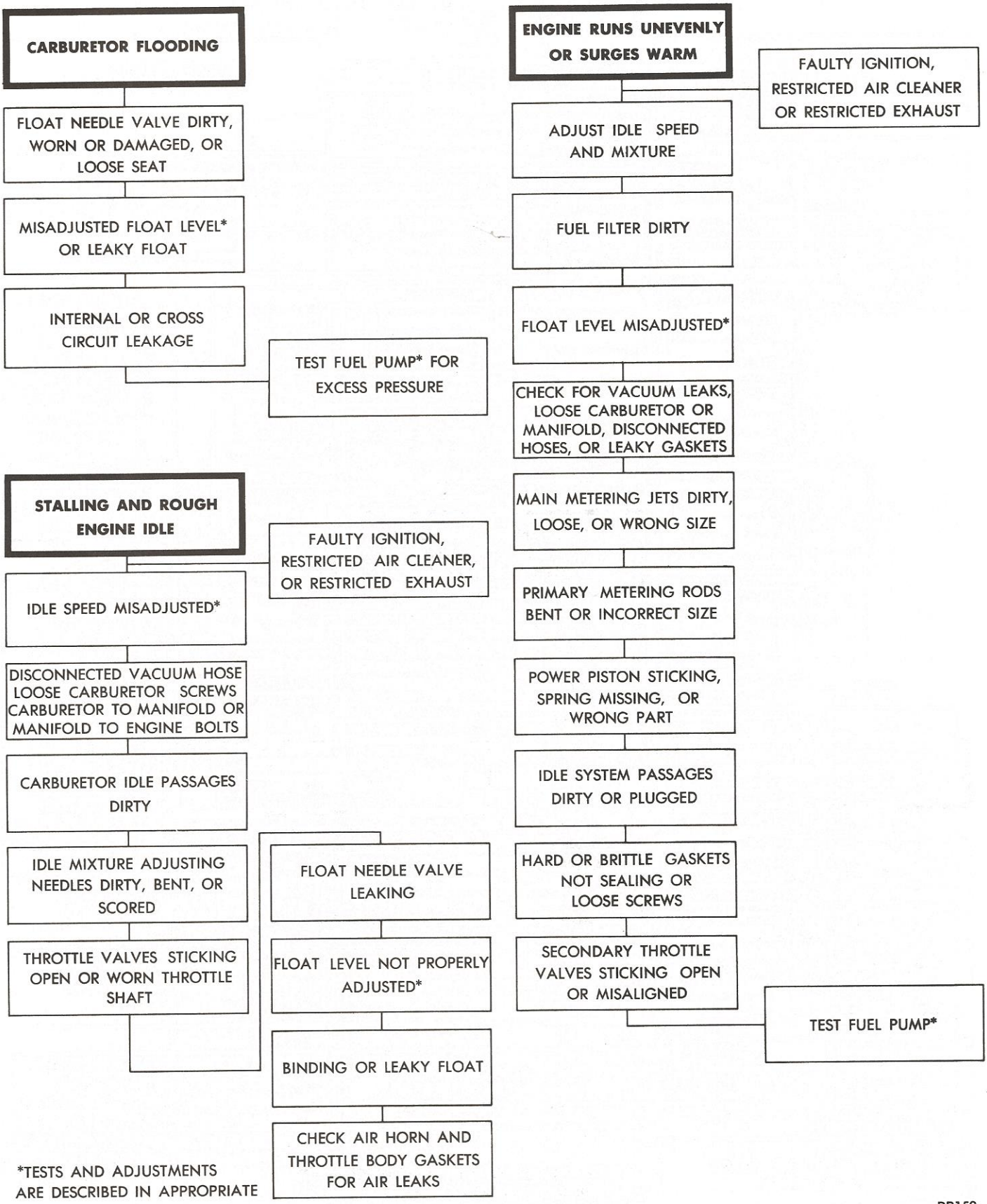
FUEL SYSTEM DIAGNOSIS PART 3



*TESTS AND ADJUSTMENTS ARE DESCRIBED IN APPROPRIATE SECTION OF SERVICE MANUAL.
**WHERE APPLICABLE

PR152

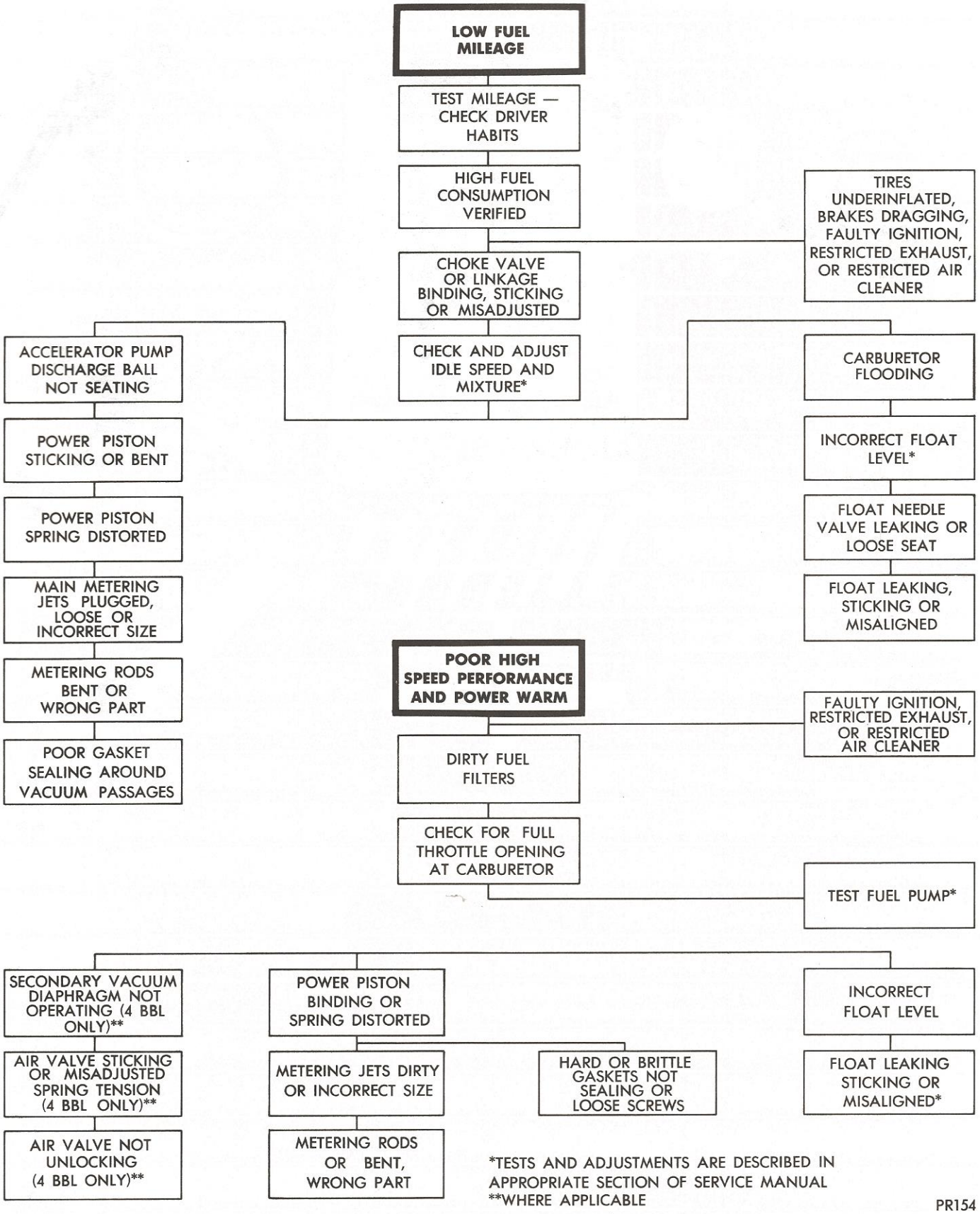
FUEL SYSTEM DIAGNOSIS PART 4



*TESTS AND ADJUSTMENTS ARE DESCRIBED IN APPROPRIATE SECTION OF SERVICE MANUAL.

PR153

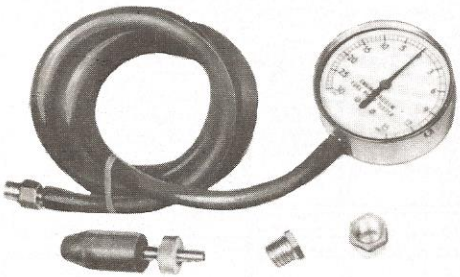
FUEL SYSTEM DIAGNOSIS PART 5



*TESTS AND ADJUSTMENTS ARE DESCRIBED IN APPROPRIATE SECTION OF SERVICE MANUAL
**WHERE APPLICABLE

PR154

FUEL SYSTEM — SPECIAL TOOLS



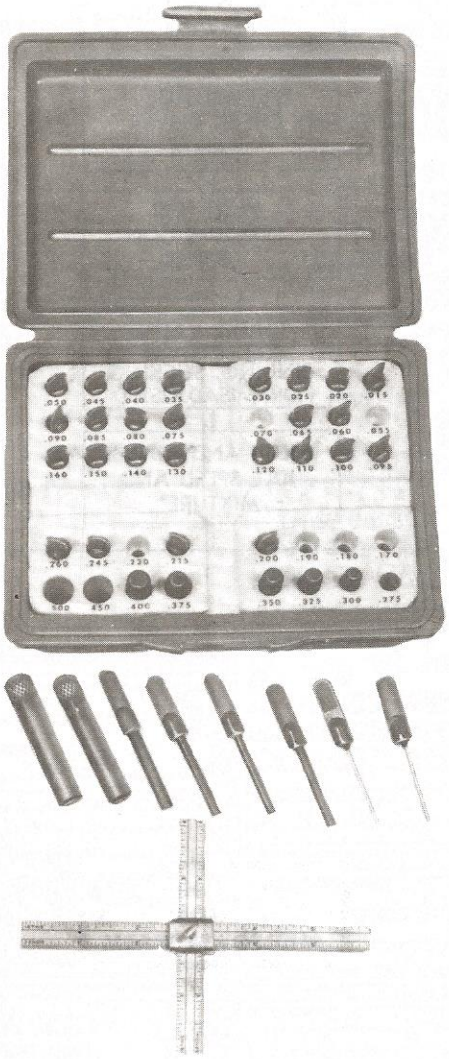
C-3411A

C-4152

C-3748

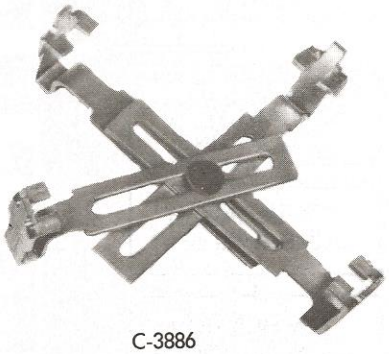
C-4231

C-4206



C-4161 KIT

C-4207



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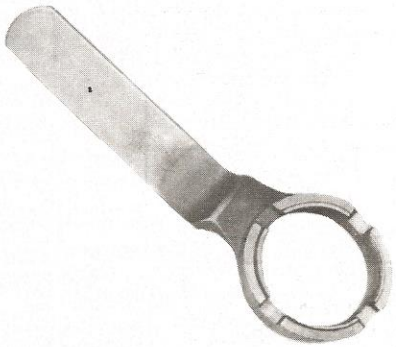

C-3582

PK371

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