

CARBURETOR SERVICE PROCEDURE ROCHESTER 2-BARREL MODEL M2MC, M2ME, E2MC & E2ME

FORM NO.
16R-28-861

NOTE: Some models of the Rochester M2MC, M2ME, E2MC & E2ME carburetors may vary in general design and appearance, but basic cleaning and adjusting procedures will remain the same.

1. DISASSEMBLY

Using the exploded view as a guide, disassemble carburetor only far enough to permit a thorough cleaning. Pay particular attention to the following:

CAUTION: The APT (adjustable part throttle used on some 1980 and earlier M2MC and M2ME models) metering rod adjustment screw, located directly in front of the power piston, is preset at the factory. Do not change adjustments. If adjustment is disturbed, replace float bowl assembly.

- Do not remove baffle plate from under choke thermostatic coil.
- Removal of choke or throttle valves is not necessary unless part is bent, seized or damaged, requiring repair or replacement. If removal is necessary, file staked (peened) ends of valve retaining screws.
- On M2MC and M2ME models, do not attempt to remove 2 small tubes in the bottom of the air horn. Tubes are permanently pressed in.
- On M2MC and M2ME models, remove power piston by pressing it down and allowing it to snap up until retainer is loosened. DO NOT attempt to remove piston by using pliers on metering rod hanger.

CAUTION: On M2MC and M2ME models, care must be taken when removing metering rods from hanger to prevent damage to metering rod springs.

NOTE: E2MC and E2ME models with computer controlled mixture solenoid are sensitive to air/fuel mixture adjustments. The solenoid lean mixture screw, solenoid rich mixture stop screw and air bleed valve are preset at the factory. Plugs are installed to prevent adjustment. Do not remove these plugs in air horn for normal carburetor overhaul unless it is determined that the carburetor and/or mixture control solenoid is the source of trouble or poor engine performance. If carburetor is source of trouble, perform routines "K" and "L" under ADJUSTMENTS before removing carburetor from vehicle.

CAUTION: On E2MC and E2ME models, care must be taken when removing the air horn to prevent damage to mixture control solenoid connector.

- On E2MC and E2ME models, the lean mixture screw plug (in air horn) must be replaced whenever air horn is removed. To remove plug, invert air horn and drive plug from its bore using a small drift. DO NOT install new plug (included in service kit) until carburetor is completely reassembled and all adjustments have been made.

NOTE: Do not remove plunger return spring or connector and wires from solenoid body. Solenoid and connector are serviced as an assembly.

- On E2MC and E2ME models, the rich mixture stop screw plug (in air horn) must be replaced whenever air horn is removed. To remove plug, invert air horn and remove the rich mixture stop screw with remover (J-28696 or BT-7967A). With stop screw removed, drive plug from its bore using a small drift. DO NOT install new plug (included in service kit) until carburetor is completely reassembled and adjustments have been made.
- When removing metering rods from E2MC and E2ME models, make sure return spring is removed with each rod.
- If necessary to remove idle air bleed valve on E2MC or E2ME models, cover bowl vents and air intakes with tape. Using a .110" (No. 35) drill, remove rivet heads retaining air bleed valve cover. Remove cover and remaining portion of rivets. Clean area around valve with compressed air. Count turns required to bottom valve while turning it clockwise with screwdriver. Record number for reassembly. Remove valve by turning it counterclockwise.

NOTE: 1980 and later models are equipped with rivets retaining choke coil cover retainers to deter tampering with factory adjustment. To remove rivets, align a .159" (No. 21) drill on rivet and drill only enough to remove rivet head. Using a small drift, drive remaining portion of rivet from housing. Repeat procedure for remaining rivets.

NOTE: On 1978 models, do not remove idle mixture limiter caps unless recalibration is determined necessary after reassembly. If limiter caps are removed, the carburetor must be recalibrated with required equipment to meet state and federal exhaust emission regulations. When limiter caps are removed, count the number of turns required to seat idle mixture screws. This will serve as a starting point during reassembly.

NOTE: On 1979 and later models, the idle mixture screws are located behind hardened steel plugs in the throttle body. DO NOT remove plugs and idle mixture screws unless it is absolutely necessary to replace mixture screws or normal cleaning and air pressure will not clean idle mixture passage. If it is necessary to remove plugs and mixture screws, the carburetor must be recalibrated with required equipment to meet state and federal exhaust emission regulations. If idle mixture screws are removed, count the number of turns required to seat each mixture screw. This will serve as a starting point during reassembly. If it is absolutely necessary to remove steel plugs and mixture screws, proceed as follows:

1. Mount throttle body, manifold side up, on a suitable holding fixture. Make 2 parallel cuts with hacksaw between locator holes. See Fig. 1.
2. Position a small punch between the two locator holes in throttle body, below one of the idle mixture screws to be removed.

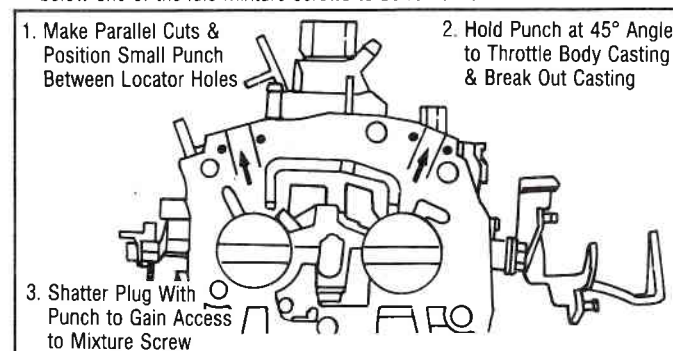


Fig. 1 Removing Steel Plugs and Idle Mixture Screws From Throttle Body

3. Holding punch at 45° angle to throttle body, drive against punch and break out throttle body casting to gain access to idle mixture plug.

CAUTION: Extreme care must be taken when throttle body casting is broken away with punch or throttle body could be ruined.

4. Now drive punch against plug. Plug will shatter. It is not necessary to remove all pieces. Remove only enough to gain access to idle mixture screw. Remove screw and spring using a thin wall 3/16" deep socket.
5. Follow same procedure to remove opposite plug, mixture screw and spring.

NOTE: 1981 and later models, equipped with Throttle Position Sensor (TPS), have plug installed to prevent tampering with TPS adjusting screw. DO NOT remove plug unless diagnosis reveals that TPS is not properly adjusted or replacement of air horn, float bowl, TPS sensor or TPS adjustment screw is necessary. To remove plug, proceed as follows:

1. Using a .076" (No. 48) drill, drill hole in aluminum plug covering TPS adjustment screw to a depth of about 1/16-1/8".

NOTE: Use care while drilling to prevent damage to adjustment screw head.

2. Start a No. 8 self-tapping screw (1/2" long) in drilled hole and turn screw in only enough to ensure good thread engagement.
3. Using wide-bladed portion of a screwdriver between screw head and air horn casting, pry against screw head to remove plug. Discard plug.

NOTE: 1981 and later models may be equipped with Idle Speed Control (ISC) solenoid, Idle Load Compensator (ILC) or Idle Speed Solenoid (ISS) to control curb idle speed. DO NOT use adjustment screw on these devices to set curb idle speed. ILC equipped carburetors have tamper-proof plugs to prevent changing of factory adjustment. To remove plug from ILC, remove rubber plug from center outlet tube, then remove metal plug.

2. CLEANING

- Using a regular carburetor cleaning solution, soak parts long enough to thoroughly clean all surfaces and passages of foreign matter.
- DO NOT soak parts containing rubber, leather or plastic, except limiter caps.

- To remove any residue after use of cleaner, rinse parts in a suitable solvent.
- Blow out all passages with dry compressed air.

NOTE: If idle air bleed valve is not removed on E2MC and E2ME carburetors, air horn should be cleaned with a low volatile cleaning solvent. DO NOT place air horn in carburetor cleaner. Damage to "O" rings may occur.

3. REASSEMBLY

Reassemble carburetor in reverse order of disassembly, paying particular attention to the following:

- The intermediate choke shaft lever and fast idle cam are assembled correctly when tang and lever are below fast idle cam.
- Open end of float retaining pin faces accelerator pump well.
- Make sure needle valve pull clip ends do not fall into holes in float arm.
- On E2MC and E2ME models, install mixture control solenoid with pin on end of solenoid aligned with hole in raised boss at bottom of float bowl.
- On E2MC and E2ME models, do not install lean mixture screw plug, rich mixture stop plug or idle air bleed plug until adjustments are complete. Perform routines "K" and "L" under ADJUSTMENTS before installing plugs.

CAUTION: Do not force the solenoid mixture screw to bottom. Damage to screw may result.

- When installing idle air bleed valve (if removed) on E2MC and E2ME models, use new "O" rings (thick "O" ring in top groove of valve and thin "O" ring in bottom groove of valve). Turn valve clockwise until it is lightly seated in valve bore. Then back valve out number of turns noted during disassembly. Refer to routine "L" under ADJUSTMENTS.
- On E2MC and E2ME models, install lean mixture screw plug only when carburetor is completely reassembled and ready for installation on vehicle. Drive new plug into bore in air horn (hollow end of plug down) until upper surface of plug is even with lower edge of chamfer in plug bore.
- On E2MC and E2ME models, install rich mixture stop screw plug only when carburetor is completely reassembled and ready for installation on vehicle. Drive new plug into idle air bleed valve tower on air horn casting (hollow end of plug down) until upper surface of plug is 1/16" below surface of air horn casting.

NOTE: New lean mixture screw and rich mixture stop screw plug MUST be installed in air horn.

- On 1980 and later models, use blind rivet installer and rivets (supplied in kit) to reinstall choke coil cover retainers. Install cover retainer with tab in 2 o'clock position, making sure tab rests in notch on outside of cover.
- On 1981 and later models, (if TPS plug was removed) install TPS plug only after adjustment of TPS. Drive new plug into air horn casting until flush with raised pump lever boss on casting.
- On models equipped with ILC, insert new metal plug and rubber plug into center outlet tube after adjustment of ILC.

NOTE: On models equipped with electric choke, DO NOT install gasket. Ground circuit is completed through choke cover and housing.

NOTE: If equipped with idle mixture plugs, seal setting after adjustment with RTV sealant.

4. ADJUSTMENTS

ADJUSTMENT TOOL NOTE: Manufacturer recommends that some adjustments be made using a special choke valve angle gauge. Settings are checked by measuring choke valve angle rather than clearance between valve and air horn wall. For 1980 and later models, this is the only procedure that should be used. For 1979 and earlier models, the standard procedure, measuring valve clearance, can be used if gauge is not available. Specifications for both are given in table.

ADJUSTMENT TOOL NOTE: Manufacturer recommends that dry float adjustments be made using a special float positioning tool (J-34817). Tool ensures accurate positioning for measurement. If tool is not available, use procedure under routine "A."

A. Float Level

1. Assemble gauge included in kit. Cut 1" off lower gauge leg. Calibrate to "B" scale.
2. Hold float retainer pin in place. Press down lightly against needle valve. See Fig. 2.
3. Position gauge 3/16" from end of float. Measure float level specified distance from top of casting to top of float.
4. To adjust M2MC and M2ME models, remove float and bend arm. Check to make sure float is correctly aligned after adjustment.
5. On E2MC and E2ME models, use the following procedure to adjust float level if setting varies more than 1/16" from specified setting.

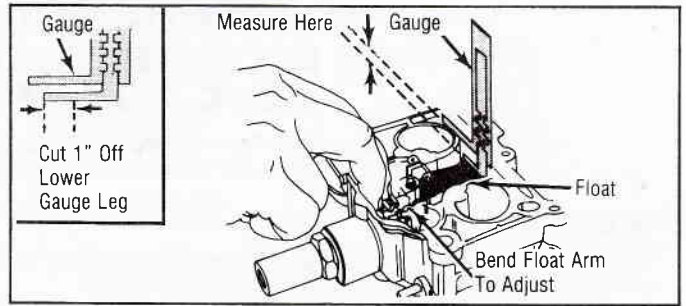


Fig. 2 Float Level Adjustment

FLOAT LEVEL TOO HIGH

1. Hold float retainer clip firmly in place.
2. Push down on center of float pontoon until correct float level setting has been obtained.

FLOAT LEVEL TOO LOW

1. Lift out metering rods. Remove solenoid connector screws.
2. Turn lean mixture solenoid screw clockwise, counting the number of turns required to bottom screw in float bowl. Record number for reassembly.
3. Turn screw counterclockwise and remove. Lift solenoid and connector from float bowl.
4. Remove float and bend arm up to adjust. Make sure float is correctly aligned after adjustment.
5. Reinstall components in reverse order that they were removed. Back out lean mixture solenoid screw the number of turns noted in step 2.

B. Mixture Solenoid Adjustment (Bench Setting)

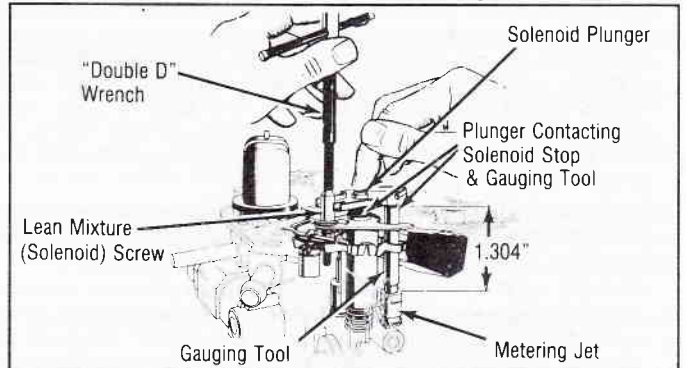


Fig. 3 Adjusting Lean Mixture Screw

LEAN MIXTURE SCREW ADJUSTMENT

ADJUSTMENT TOOL NOTE: Manufacturer recommends that this adjustment be made with a special gauging tool (J-33815/BT-8253-A). This tool measures 1.304" in length and fits over the throttle side metering jet rod guide. If this tool is not available, use procedure under routine "K".

1. Install plastic aneroid cavity insert (if used) beneath mixture control solenoid connector in float bowl. Install insert with inset aligned with recess of bowl cavity and seated flush with bowl casting surface. Tang on upper lip of insert goes in deep slot in bowl closest to fuel inlet nut.
2. Install mixture control solenoid screw tension spring between raised bosses next to float hanger pin. Carefully install mixture control solenoid in float chamber. Align pin on end of solenoid with hole in raised boss at bottom of bowl. Align connector wires to fit in slot in bowl or plastic insert (if used).
3. Install solenoid lean mixture screw through hole in solenoid bracket and tension spring in float bowl. First 6 threads of mixture screw should be engaged to assure proper installation.
4. Install mixture control solenoid gauging tool over throttle side metering jet rod guide. Temporarily install solenoid plunger. See Fig. 3.
5. Hold solenoid plunger against solenoid stop. Using a "double D" wrench, slowly turn lean mixture screw clockwise until solenoid plunger just contacts gauging tool. See Fig. 3.
6. Adjustment is correct when solenoid plunger contacts BOTH the solenoid stop and the gauging tool. Remove solenoid plunger and gauging tool.

SOLENOID RICH MIXTURE STOP SCREW

1. With solenoid lean mixture screw properly set and air horn installed, insert plastic float gauge in vertical "D" shaped vent hole in air horn casting.

- With float gauge installed, read mark (in inches) on gauge that lines up with top of air horn casting at eye level. Record reading. Lightly depress float gauge and again read mark on gauge that lines up with top of casting. Record reading.
- Subtract the 2 readings taken in step 2. This difference is the total solenoid travel. Using a "double D" wrench, turn rich mixture stop screw until solenoid travel (difference between readings) is $1/8$ ".
- Final adjustment may be checked on car using procedure "K." DO NOT install lean mixture screw plug and rich mixture stop screw plug until the mixture solenoid adjustment is correct. Plugs MUST be installed, when adjustments are complete, to seal settings and to prevent fuel vapor loss.

C. Accelerator Pump

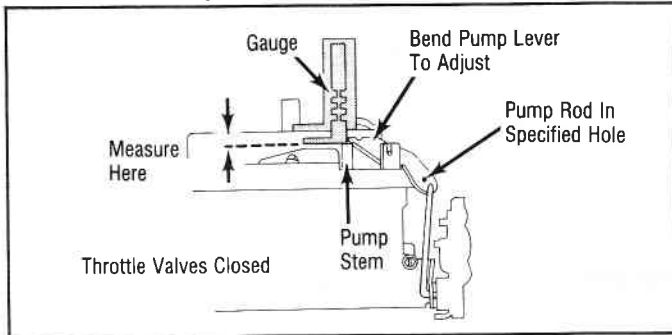


Fig. 4 Accelerator Pump Adjustment

ALL MODELS EXC. 1981 AND LATER E2MC & E2ME

- Place the pump rod in the specified hole in the pump lever. See Fig. 4.
 - Close throttle valves completely. Make sure fast idle lever is off fast idle cam steps.
 - Calibrate gauge to "B" scale. Measure accelerator pump specified distance from top of choke valve wall (next to vent stack) to top of pump stem.
 - To adjust, bend pump lever.
- 1981 AND LATER E2MC & E2ME
No pump adjustment required.

D. Choke Coil Lever

NOTE: On models equipped with choke coil cover rivets, remove rivets as described under DISASSEMBLY and proceed as follows:

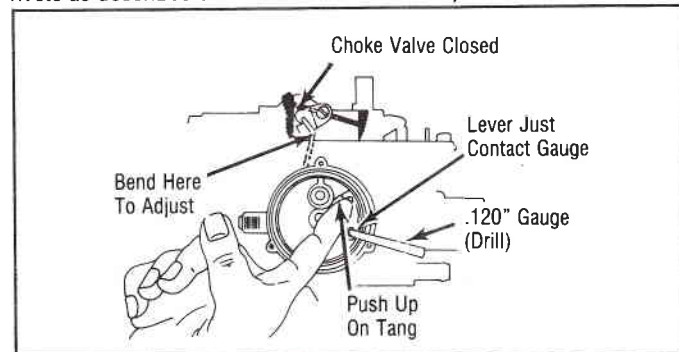


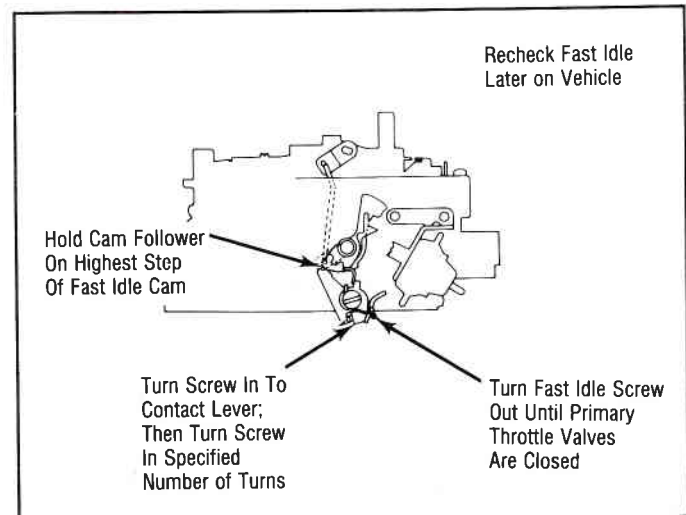
Fig. 5 Choke Coil Lever Adjustment

- Place fast idle cam follower on high step of fast idle cam. See Fig. 5.
- Push up on thermostatic coil tang until choke valve is fully closed.
- Insert a .120" gauge (drill) into hole in choke housing. Lower edge of lever should just contact gauge.
- To adjust, bend choke rod.

E. Fast Idle Adjustment (Bench Setting) 1981 and Later Models Only

NOTE: This is a preliminary adjustment only. It is required to ensure that other adjustments are made with fast idle speed approximately correct. Final Cold (Fast) Idle Speed adjustment must be made with carburetor installed and engine running.

- Position the fast idle speed cam follower on highest step of the fast idle cam. Back off fast idle speed screw until the throttle valves are completely closed. See Fig. 6.
- Turn fast idle speed screw in until it just touches lever, then turn in an additional 4-1/2 turns (3 on 1982 and later models).



**Fig. 6 Adjusting Fast Idle (Bench Setting)
1981 and Later Models Only**

F. Fast Idle Cam

NOTE: Choke coil lever and fast idle adjustments must be correct before performing this adjustment on 1981 and later models. Adjustment is performed with choke valve angle gauge on 1980 and later models.

CAUTION: If equipped, do not remove rivets and choke cover to perform this adjustment. Use rubber band on vacuum break lever tang to hold choke valve closed and proceed as follows.

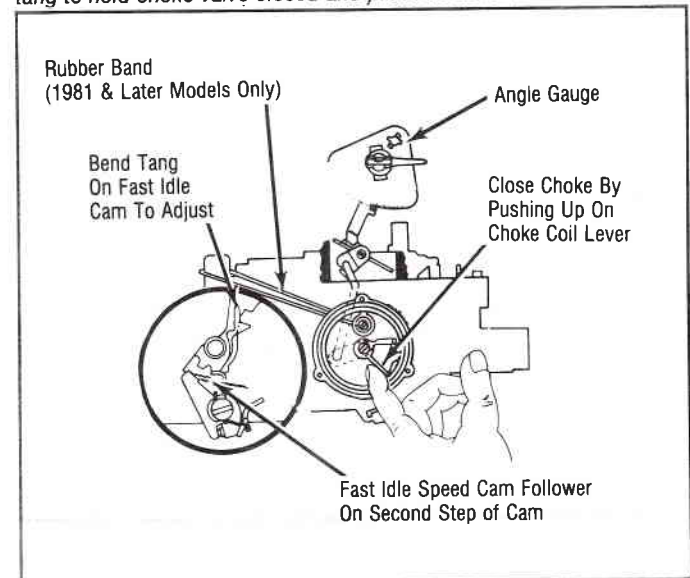


Fig. 7 Fast Idle Cam Adjustment

- Place fast idle cam follower on second step of fast idle cam against shoulder of highest step. Close choke completely by pushing up on choke coil lever or vacuum break lever tang. On 1981 and later models, hold choke closed with rubber band. See Fig. 7.
- If choke angle gauge is being used, check that choke valve is at specified angle with gauge bubble reading level.
- If adjustment is being made without gauge, measure fast idle cam specified clearance between lower edge of choke valve and air horn wall.
- To adjust, bend tang on fast idle cam lever until gauge bubble is level at specified angle or specified clearance is obtained.

G. Front Vacuum Break

NOTE: Choke coil lever and fast idle adjustments must be correct before performing this adjustment on 1981 and later models. Adjustment is performed with choke valve angle gauge on 1980 and later models.

CAUTION: If equipped, do not remove rivets and choke cover to perform this adjustment. Use rubber band on vacuum break lever tang to hold choke valve closed and proceed as follows.

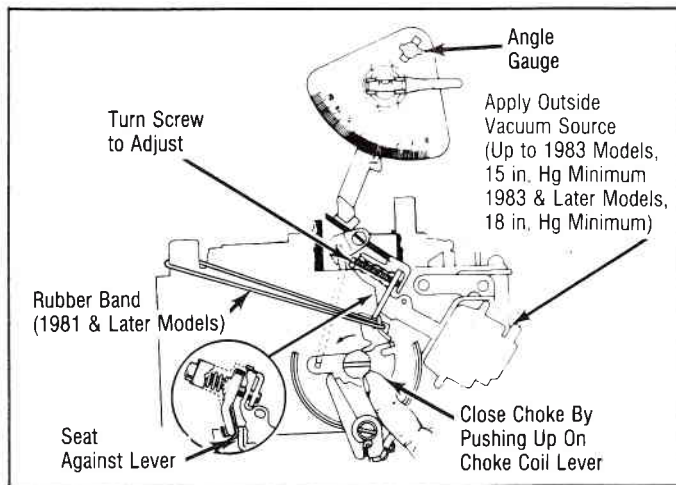


Fig. 8 Front Vacuum Break Adjustment

1. On 1981 and later models, remove vacuum break from carburetor, place bracket in vise and grind off tamper-resistant weld holding adjustment screw cover. Remove cover and reinstall vacuum break.
2. On all models, using an outside vacuum source of at least 15 in. Hg (1983 and later models, 18 in. Hg), seat primary (front) vacuum break diaphragm. Ensure left bucking spring is seated against lever, if equipped. See Fig. 8.

NOTE: On models equipped with air bleed, remove rubber cover from filter and plug vacuum tube with a piece of tape. If bleed hole is in end of diaphragm, plug hole in end of diaphragm with a piece of tape. Remove tape after completing adjustment.

3. Close choke by pushing upward on choke coil lever or vacuum break lever tang. On 1981 and later models, hold choke closed with rubber band. If choke angle gauge is being used, check that choke valve is at specified angle with gauge bubble level.
4. If adjustment is made without angle gauge, measure front vacuum break specified clearance between upper edge of choke valve and air horn wall.
5. To adjust, turn front vacuum break adjustment screw until gauge bubble is level at specified angle or specified clearance is obtained.

H. Rear Vacuum Break

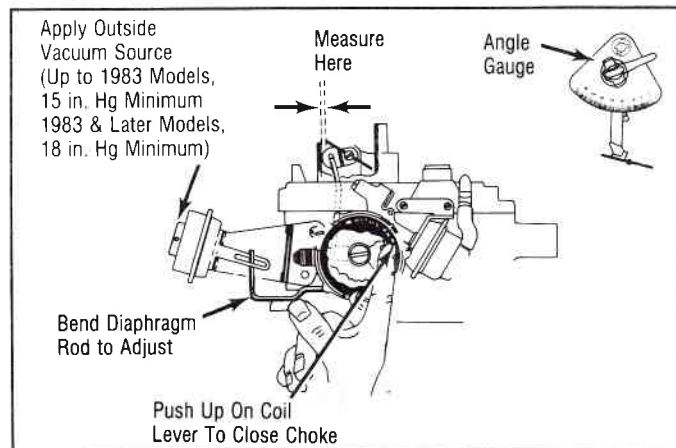


Fig. 9 Rear Vacuum Break Adjustment (1980 and Earlier Models)

1980 & EARLIER MODELS

1. Seat vacuum break diaphragm using an outside vacuum source of at least 15 in. Hg (1983 and later models, 18 in. Hg). Cover the bleed hole (if equipped) in end of diaphragm with tape. See Fig. 9.
2. With choke coil removed, close choke valve completely by pushing choke inner lever counterclockwise.
3. If choke angle gauge is being used, check that choke valve is at specified angle with gauge bubble level.
4. If adjustment is being made without angle gauge, measure rear vacuum break specified clearance between upper edge of choke valve and air horn wall.
5. To adjust, bend diaphragm rod until gauge bubble is level at specified angle or specified clearance is obtained. Remove tape.

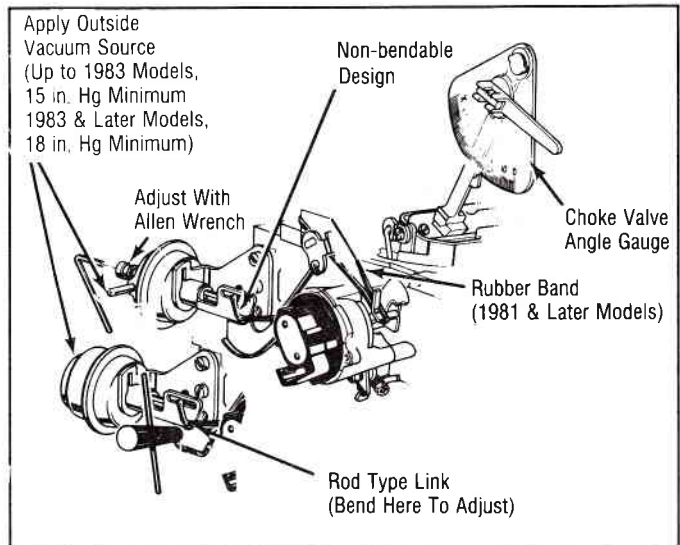


Fig. 10 Rear Vacuum Break Adjustment (1981 and Later Models Only)

1981 & LATER MODELS

NOTE: Choke coil lever and fast idle adjustments must be correct before performing this adjustment. Adjustment is performed with choke valve angle gauge.

CAUTION: Do not remove rivets and choke cover to perform this adjustment. Use rubber band on vacuum break lever tang to hold choke valve closed.

1. Remove vacuum break from carburetor. Place bracket in vise and grind off tamper-resistant adjustment screw cap. Reinstall vacuum break unit.
2. On delay models with air bleed, plug end cover using an accelerator pump plunger cup.
3. On all models, using an outside vacuum source of at least 15 in. Hg (1983 and later models, 18 in. Hg), seat vacuum diaphragm. See Fig. 10.

NOTE: On models equipped with air bleed, remove rubber cover from filter and plug vacuum tube with a piece of tape. If bleed hole is in end of diaphragm, plug hole in end of diaphragm with a piece of tape. Remove tape after completing adjustment.

4. Close choke by pushing up on choke coil lever or vacuum break lever tang. Hold choke closed with a rubber band. If equipped, bucking spring must be compressed.
5. Bubble on choke angle gauge should be centered with specified degree mark opposite pointer.
6. To adjust, use a 1/8" hex wrench to turn adjustment screw in rear cover of vacuum break unit until bubble of choke valve gauge is centered. Remove accelerator pump plunger cup.

NOTE: Only rod type vacuum break link may be adjusted by bending. Vacuum break units with flat steel design links are adjusted with an allen wrench. See Fig. 10.

I. Automatic Choke

NOTE: On models equipped with rivets to retain choke coil cover, remove rivets as described under DISASSEMBLY. Only remove choke cover if major overhaul is required or if choke cover requires replacement.

1. On models without rivets, loosen 3 cover retaining screws. On all models, place fast idle cam follower on highest step of fast idle cam.
2. Rotate cover until specified mark on cover is aligned with point on housing.

J. Choke Unloader

NOTE: Adjust automatic choke first on all models.

NOTE: On 1981 and later models, choke coil lever and fast idle adjustments must be correct before performing this adjustment. Adjustment is performed with choke valve angle gauge.

CAUTION: On 1981 and later models, do not remove choke cover to perform this adjustment. Use rubber band on vacuum break lever tang to hold choke valve closed.

1. With choke cover installed and adjusted, hold throttle valves wide open. See Fig. 11.
2. If choke angle gauge is being used, check that choke valve is at specified angle with gauge bubble level.