

CARBURETOR

CARTER MODEL AS-3206S

The Carter Model AS-3206S used on the 10 Series with automatic transmission is a Single Bore Down-Draft Carburetor which incorporates two light weight aluminum castings. Readily accessible adjustments and the combined body flange casting make it easy to service. All fuel and vacuum passages are confined to the two castings; calibration points are easy to check and clean in service. All major gasket surfaces are above the fuel level to minimize fuel leakage. A two stage high speed metering control is used to produce instantaneous response to engine demands. One is mechanically controlled and the other is actuated by manifold vacuum.

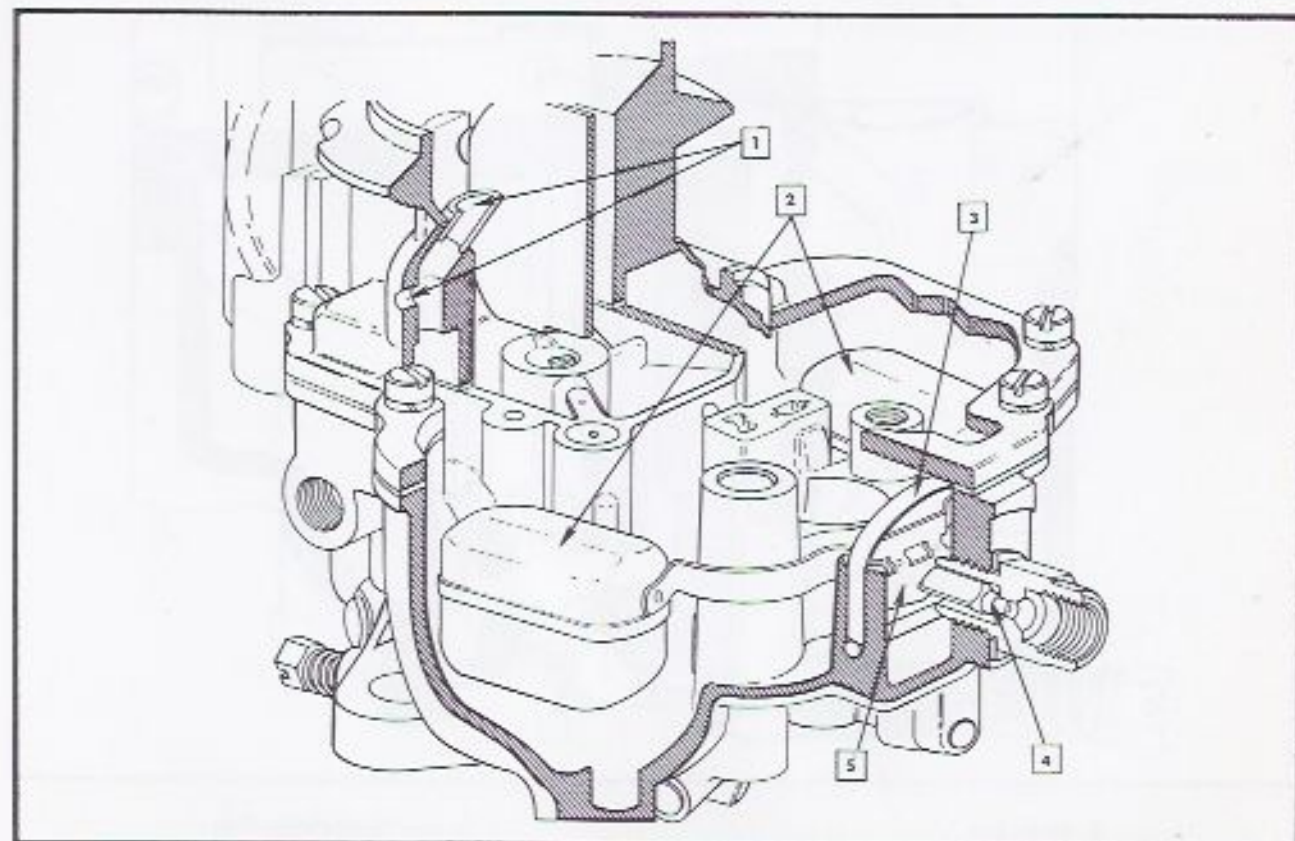
The carburetor model number is stamped on a triangular identification tag attached to the carburetor. This tag also contains other important information and should always be installed on the carburetor.

Carburetor Circuits

Five conventional circuits are used in this carburetor: Float Circuit, Low Speed Circuit, High Speed Circuit, Pump Circuit, and Choke Circuit.

Float Circuit

The float circuit maintains an adequate supply of fuel at the proper level in the bowl for use by the



- 1. Bowl Vents
- 2. Float

- 3. Float Hinge Pin Retainer
- 4. Needle and Seat Assembly (Resilient Seat)

- 5. Float Adjustment Tabs

FIGURE 4 — Float Circuit

other circuits. The twin floats, which closely follow the contours of the bowl, are designed to provide a stable fuel supply under all operating conditions. The floats are connected with a one-piece arm and lever assembly which contacts the fuel inlet needle (Fig. 4). It is extremely important that the float lever contact the center of the needle to assure it will seat correctly.

Fuel enters the carburetor through the needle and seat assembly. When the fuel reaches a predetermined level in the bowl, the float lever pushes the needle into its seat to shut off the flow of fuel. The fuel level is maintained by the opening and closing of the needle.

The importance of clean fuel cannot be over-emphasized. Even a tiny speck of dirt lodged between the needle and seat will cause the carburetor to flood. Replacing needles and seats or readjusting floats will not stop flooding due to dirt.

The needle and seat assembly consists of a solid needle and a resilient seat. This synthetic material seat insert provides a more positive seal and therefore maintains a more constant fuel level in the carburetor bowl. It is not readily affected by small particles of foreign material.

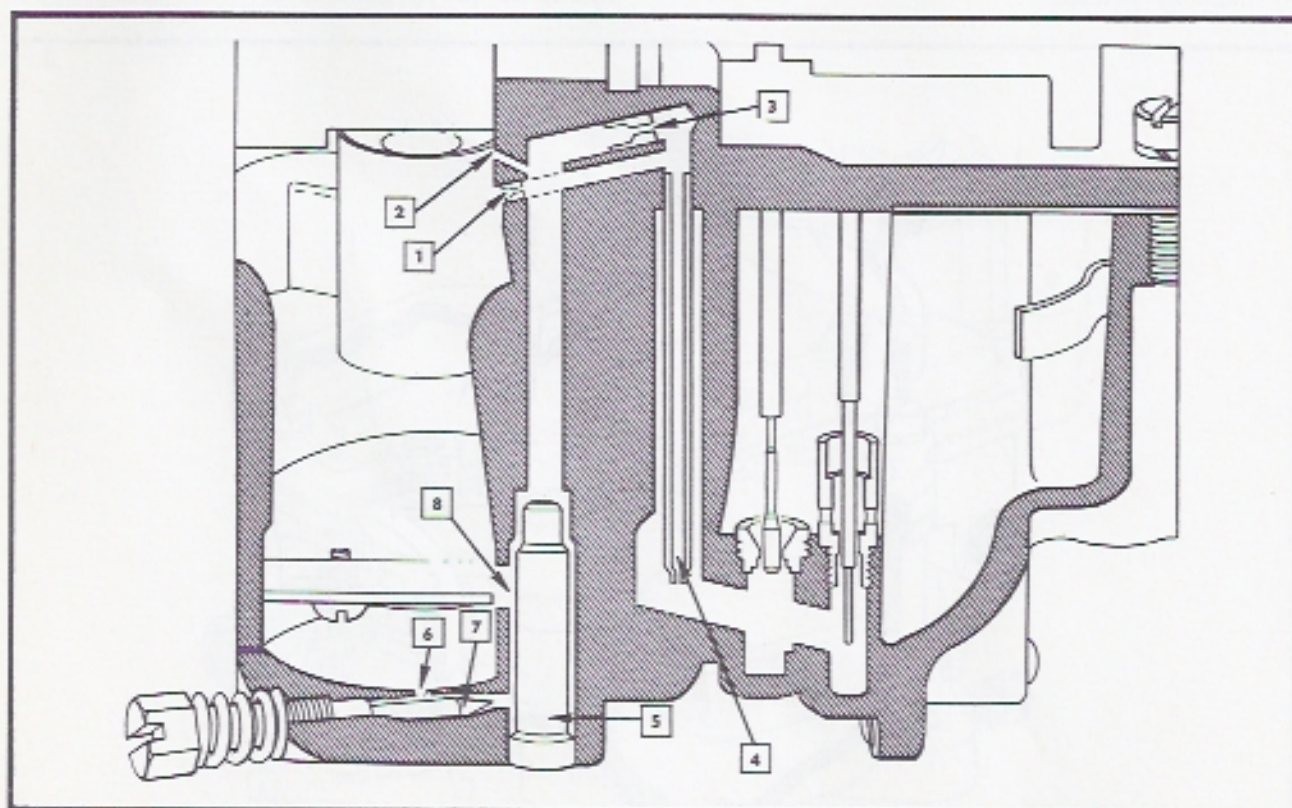
The float pin retainer is held in place by the bowl cover to prevent the float from rising out of its normal position. Failure to install the retainer will cause spasmodic flooding.

The float bowl is vented by a combination inside-outside vent to assure proper air pressure above the fuel at all times. By venting the bowl in this manner, hot engine starting and hot idle performance is improved. A solid bowl cover gasket on one side of the carburetor is used in conjunction with a channel cast in the underside of the bowl cover to allow air from these vents to enter the bowl. The gasket provides a baffling action to prevent fuel being discharged out the bowl vents during extremely rough road operation or short-fast turns.

To avoid air or fuel leakage, the castings must seal tightly at the various passage connections and between the bowl and the carburetor bore. Always use a new bowl gasket to assure this positive seal to prevent stalling or erratic low speed performance.

Low Speed Circuit

Fuel for idle and early part throttle mixture is metered through the low speed circuit.



1. Air By-Pass
2. Idle Air Bleed
3. Economizer
4. Low Speed Jet

5. Low Speed Passage Plug
6. Idle Adjusting Screw Port
7. Idle Adjusting Screw
8. Idle Port (slot)

FIGURE 5 — Low Speed Circuit

Extreme care should be exercised in handling the carburetor during servicing operations as the throttle valve (when open) extends below the flange surface. The edge of the valve is angled and can be easily damaged. It is also important that care be taken when handling the air horn and bowl cover as the low speed jet is pressed into the bowl cover and may be damaged by rough handling. The pressed-in low speed jet is not serviced separately and must *never* be removed.

Gasoline enters the idle well through the metering rod jet and the power jet (Fig. 5). The low speed jet meters the fuel at the lower end of the tube. Fuel flows up through the tube into the passage in the bowl cover where air, metered through the by-pass, mixes with the fuel. Both air and fuel then pass through the economizer and move downward in the passage where additional air, metered by the idle bleed, mixes with the fuel and is discharged into the manifold through the idle port opening and the idle adjusting screw port.

Adjusting the idle mixture screw controls the amount of mixture discharged into the manifold. Turning the idle screw toward its seat reduces the amount of mixture; turning the screw out increases the amount of mixture supplied to the engine.

The idle port is slot-shaped and as the throttle valve is opened, more of the idle port is uncovered which allows a calibrated increase in the amount of mixture admitted to the manifold.

The idle jet, by-pass, economizer, idle bleed, and idle port hole, as well as the bore of the carburetor are all metering points and must be free from dirt and carbon. Restrictions will cause poor low speed performance. Worn or damaged idle adjusting screws should be replaced.

The long plug at the lower end of the low speed passage reduces the size of idle port cavity. This prevents engine surge during deceleration. It should not be removed in service.

A vapor vent hole drilled into the bore of the carburetor above the throttle valve aids in quick hot-engine starting. It prevents fuel vapors from accumulating in the bore of the carburetor by allowing them to escape to the atmosphere.

High Speed Circuit

Fuel for most part throttle and all full throttle operation is supplied through the high speed circuit.

The position of the metering rod in the metering rod jet, and the power jet rod in its jet, controls the amount of fuel admitted to the high speed nozzle.

The metering rod is larger in diameter at its lower end (Fig. 6). As the throttle is opened the metering

rod moves *downward* and more fuel is permitted to flow through the metering rod jet. The metering rod is mechanically positioned in its jet by the opening and closing of the throttle valve.

The metering rod position must be synchronized with the throttle valve, so that the correct diameter of the rod in the jet will meter fuel in proportion to the volume of air flowing through the carburetor. This synchronization is known as "metering rod adjustment" and should be checked whenever the carburetor is disassembled and during each tune-up.

The position of the power jet rod is controlled by manifold vacuum applied to the spring loaded vacuum piston. No adjustment is necessary.

During part throttle operation manifold vacuum is high and the vacuum piston is pushed downward, compressing the spring, and holding the power jet rod down in its metering jet. Fuel is then metered around the larger diameter of the rod in the jet. This is true at all times that the vacuum in the intake manifold (and below the piston) is strong enough to overcome the tension of the spring.

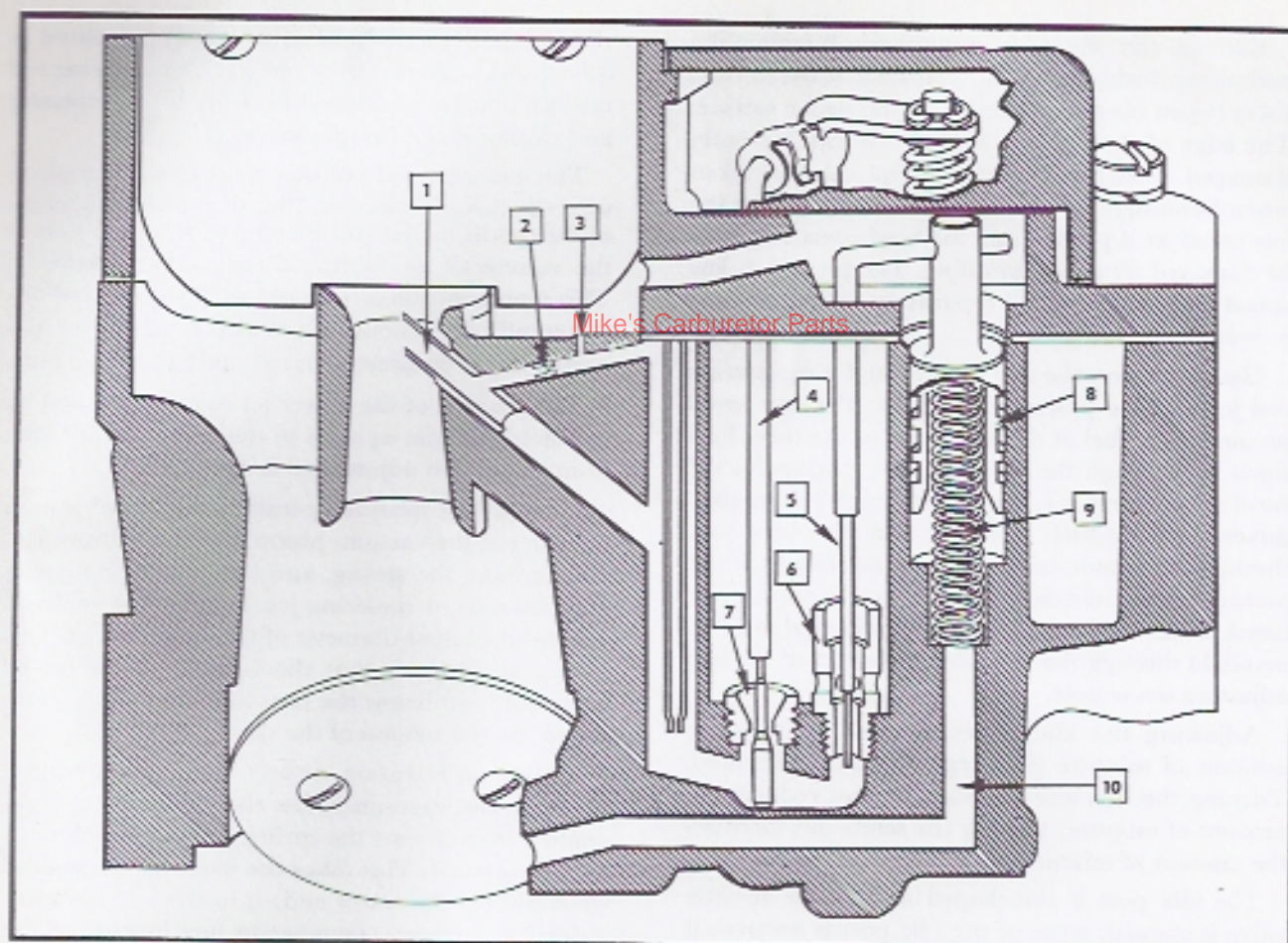
During acceleration, or any operating condition whereby the vacuum below the piston is not great enough to overcome the spring tension, the piston is pushed upward. This raises the rod until the smaller diameter (at the lower end) is in the jet. This provides the necessary increase in fuel flowing to the discharge nozzle.

The power jet rod does not require adjustment but always be certain that the piston moves freely and the spring has not been altered or damaged.

Due to lower hood lines (smaller engine compartments), more heat from higher horsepower engines, added "power units," and air conditioning equipment, one of the greatest problems of the present day fuel systems is to adequately handle the great quantities of vapor from the modern highly volatile fuel. Under extreme heat conditions there can be up to 30 times as much vapor as liquid gasoline in the fuel system.

During idle operation or with the engine shut off (with hot engine on an extremely warm day) fuel sometimes boils in the bowl and the various passages in the carburetor. When these vapor bubbles in the high speed passage force liquid fuel out the nozzle, the carburetor is said to be "percolating."

In the Carter "AS" carburetor these bubbles rise up through the low speed jet well and the vapors escape through the bleed hole in the connecting passage, as well as through the calibrated bushing to the top of the nozzle. In this way no liquid fuel is forced out the nozzle. This anti-percolator bushing, bleed and main nozzle are permanently installed and must never be removed in service.



1. Main Nozzle
2. High Speed Air Bleed
3. Anti-Percolator and Bleed
4. Metering Rod
5. Power Rod

6. Power Rod Jet
7. Metering Rod Jet
8. Power Rod Piston
9. Power Rod Spring
10. Vacuum Passage

FIGURE 6 — High Speed Circuit

Pump Circuit

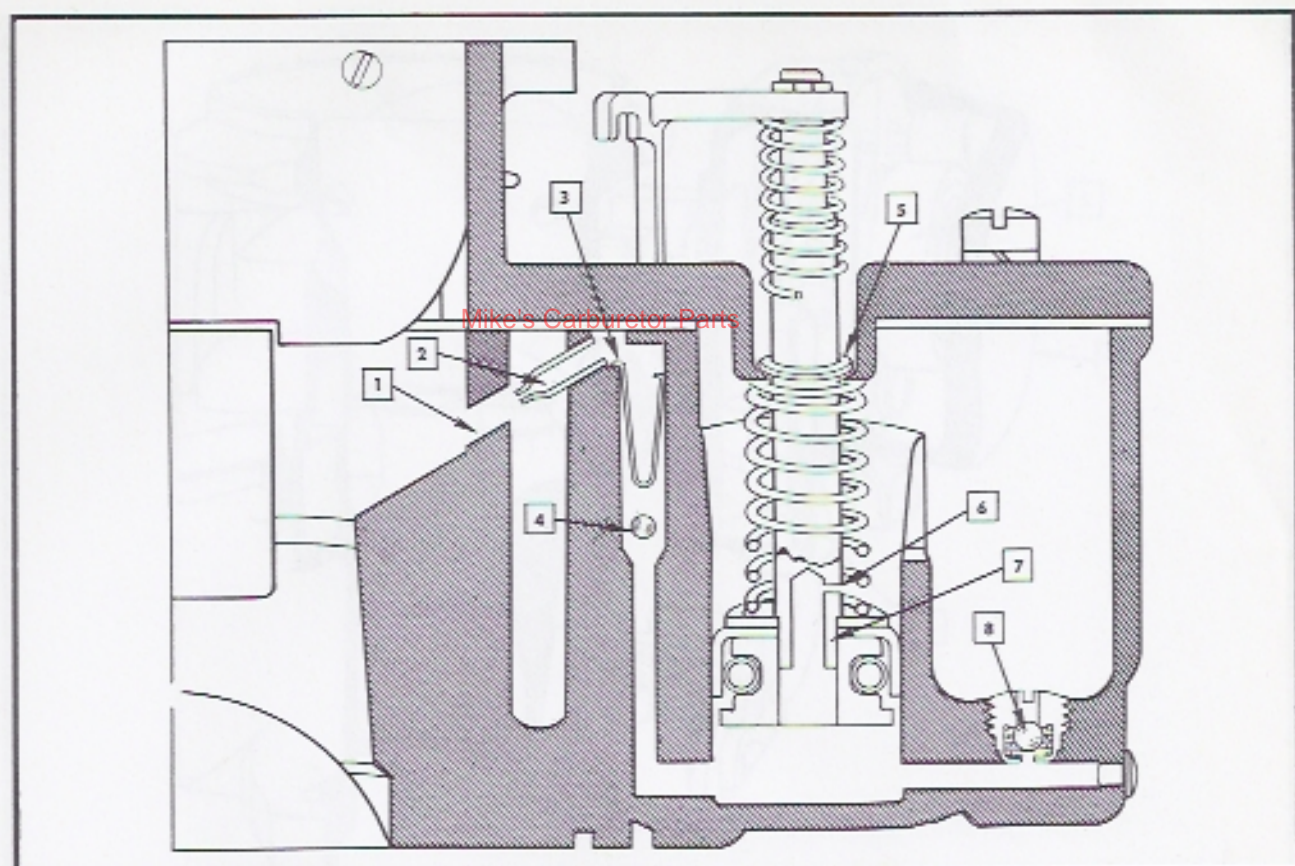
The accelerating pump circuit provides the measured amount of fuel necessary to assure smooth engine performance during acceleration at lower car speeds.

As the throttle is closed, the pump plunger moves upward in its cylinder, compressing the lower pump spring. Fuel is drawn into the cylinder through the intake check valve located in the fuel bowl. The discharge ball, seated at this time, prevents air being drawn into the cylinder. As the throttle is opened, the pump plunger moves downward, actuated by expansion of the lower pump spring, forcing fuel through the discharge passage, past the discharge ball to the pump discharge jet. The discharge check ball spring retainer limits the distance the ball can move. As the plunger moves downward, the intake check seats to prevent fuel being discharged back into the bowl. However, a calibrated amount of fuel will escape through the small bleed hole in the lower

portion of the plunger (Fig. 7). This bleed permits vapors to escape from within the pump cylinder. The calibration of the lower pump spring and the size of the pump jet provide a pump discharge of the desired duration. The pump jet is pressed into the casting and must not be removed in service.

During high speed operation, a vacuum exists at the pump discharge port. To prevent fuel being drawn through the pump circuit, the pump jet is vented by its location in the fuel bowl above the fuel level.

The intake and discharge check balls may be service-tested in the following manner: With bowl cover removed, fill the bowl with clean fuel and operate the plunger with quick short strokes. Place one finger over the discharge passage above the ball to seal the passage. Watch for fuel being forced back into the bowl through the intake check. If this occurs, the intake check is defective and it must be replaced.



1. Pump Discharge Window
2. Pump Discharge Jet
3. Discharge Check Ball Spring Retainer
4. Discharge Check Ball

5. Pump Plunger Rod Plastic Washer
6. Pump Bleed Hole
7. Pump Plunger Assembly
8. Pump Intake Check Ball

FIGURE 7 — Pump Circuit

Remove finger from top of discharge passage, and carefully push plunger downward until a slight amount of fuel is above the ball. Then quickly raise the plunger a short distance and note if fuel leaks back into the passage past the ball. If this occurs, carefully inspect discharge ball and seat. If the seat is defective, tap ball lightly to reform seat. Use new ball and recheck for fuel leakage.

The pump plunger must be installed in the pump cylinder before installing the bowl cover. Unless this is done, the plunger leather may be damaged by the slots in the cylinder. Install the plunger in its cylinder with a rotating movement to prevent damaging the leather.

A small plastic washer fits snugly around the upper portion of the pump plunger rod and is held in place by the upper pump spring. This washer prevents air from entering the area around the plunger rod and the opening in bowl cover.

Choke Circuit

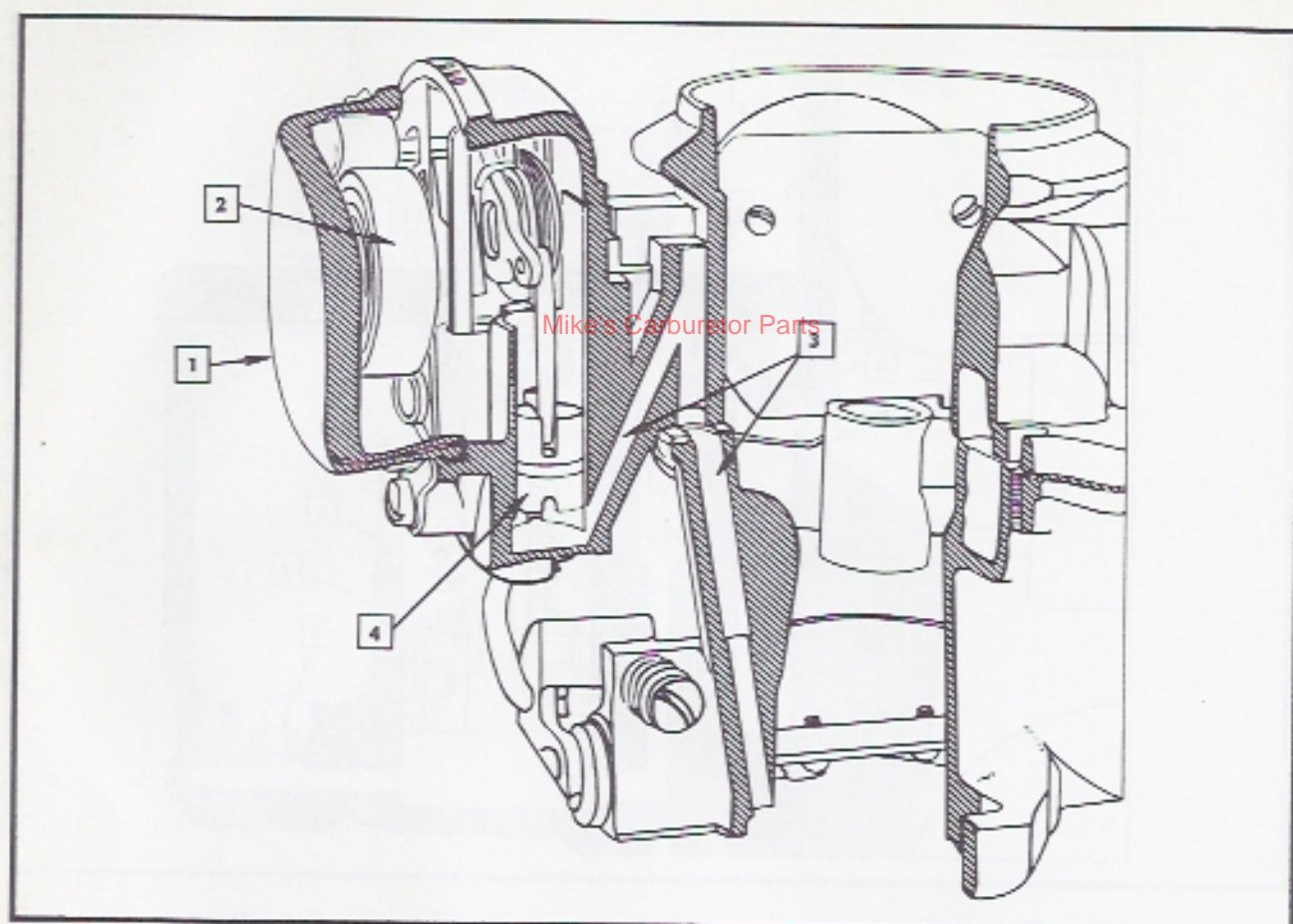
The Climatic® Control provides the correct mixture necessary to assure quick cold engine starting

and proper warm-up performance. When the engine is cold, tension of the thermostatic coil holds the choke valve closed. When the engine is started, air velocity against the offset choke valve causes the valve to open slightly against the thermostatic coil tension. Intake manifold vacuum applied to the choke piston also tends to pull the choke valve open (Fig. 8).

The choke valve assumes a position, where tension of the thermostatic coil is balanced by the pull of the vacuum on the piston and force of the incoming air against the offset choke valve.

When the engine starts, slots located in the choke piston cylinder are uncovered to allow intake manifold vacuum to draw air, heated by the exhaust manifold, through the choke control housing. The flow of warm air in turn heats the thermostatic coil and causes it to gradually lose its tension until the choke valve reaches full open position.

If the engine is accelerated during the warm-up period, the corresponding drop in manifold vacuum allows the thermostatic coil to momentarily close the choke, providing the required richer mixture.



1. Choke Cover
2. Choke Thermostatic Coil

3. Vacuum Passage
4. Choke Piston

FIGURE 8 — Choke Circuit

The choke baffle plate prevents particles of dirt and carbon (carried in with the hot air) from depositing on the choke piston cylinder walls. This would retard choke piston action and eventually cause the piston to stick.

When servicing the carburetor, check for: Air leaks: between coil housing and gasket, around the welch plug in the piston housing, between choke shaft and piston housing, Dirt and/or carbon, Binding of choke shaft, valve, or connecting linkage.

Disassembly

The following disassembly procedure applies to complete overhaul only, and with carburetor removed from the engine. A complete carburetor overhaul includes: thorough cleaning and inspection, replacing worn parts, replacing all gaskets, gauging or sizing calibrated passages and replacing when not to specifications, assembly and final adjustments. A complete tear down of this carburetor is not necessary for adjustments only. See Adjustments.

Remove the dust cover screws and lift the dust cover from the air horn assembly. Discard the gasket (Fig. 9).

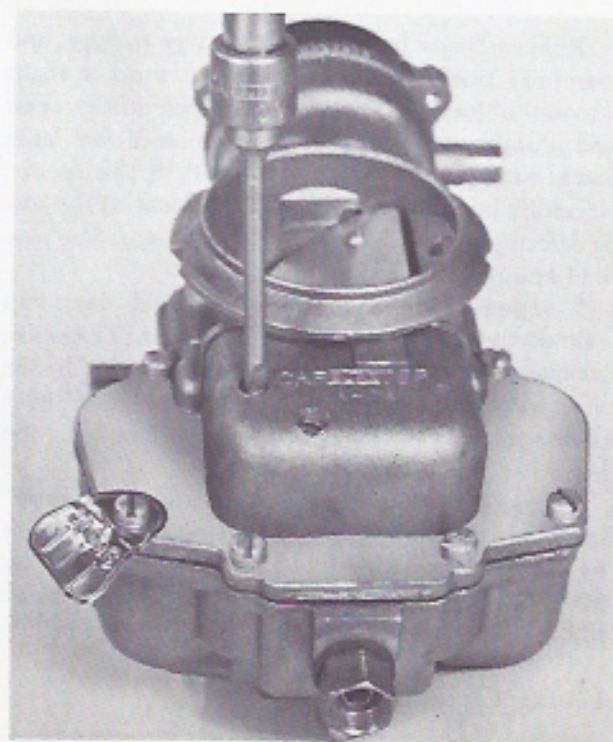


FIGURE 9 — Removing Dust Cover

Remove the throttle shaft arm screw and throttle shaft arm. Note the position of the throttle shaft arm (Fig. 10).

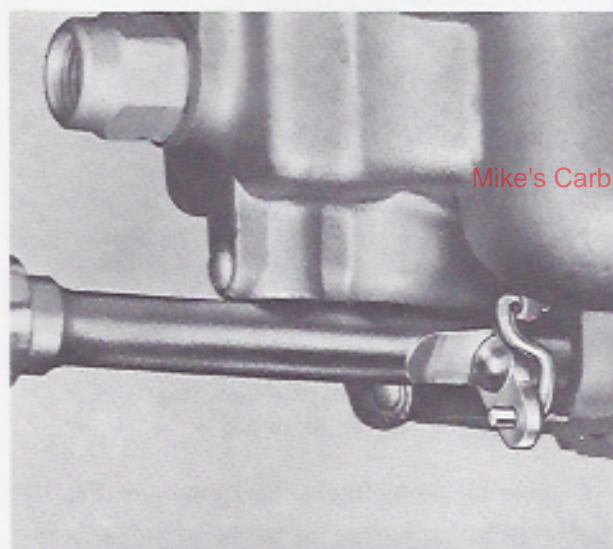


FIGURE 10 — Removing Throttle Shaft Arm Screw

Depress the pump lifter link and slide the "S" shaped connector link out.

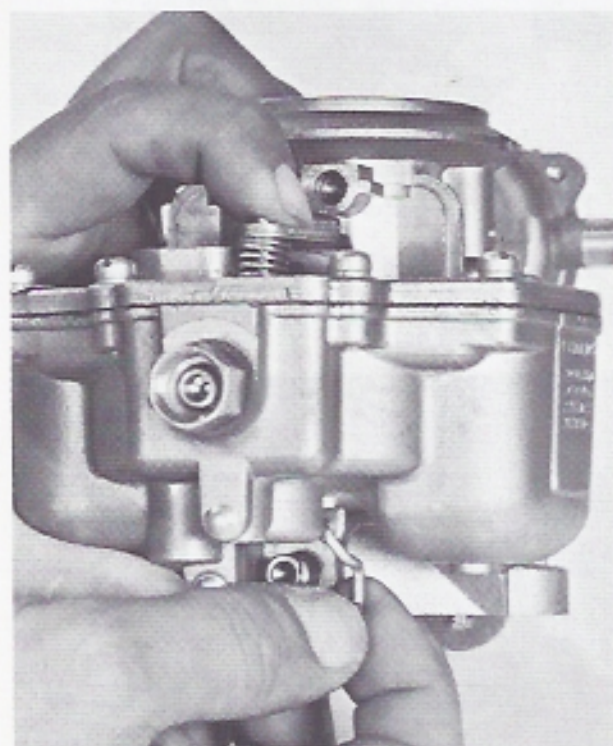


FIGURE 11 — Removing Pump Connector Link

With needle nosed pliers remove the pin spring from the choke connector rod and slide the rod out of the key hole shaped slot in the throttle lever (Figs. 12 and 13).

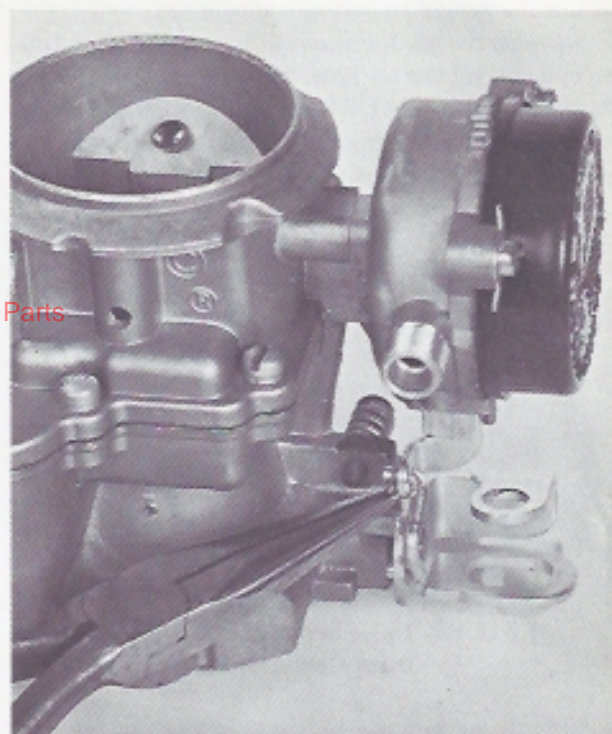


FIGURE 12 — Choke Connector Rod Pin Spring

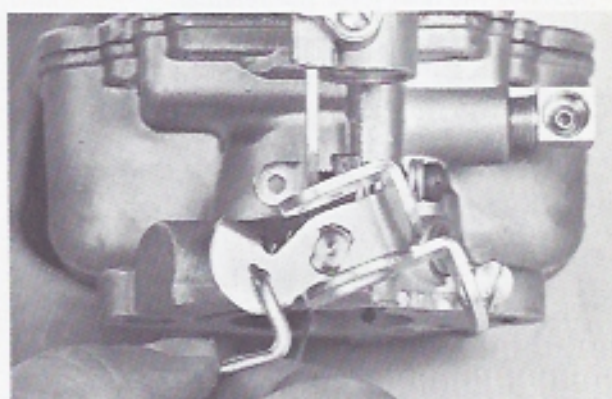


FIGURE 13 — Removing Choke Connector Rod

Depress the pump spring and remove the pump spring retainer. Lift out the pump lifter link, metering rod, and upper pump spring.

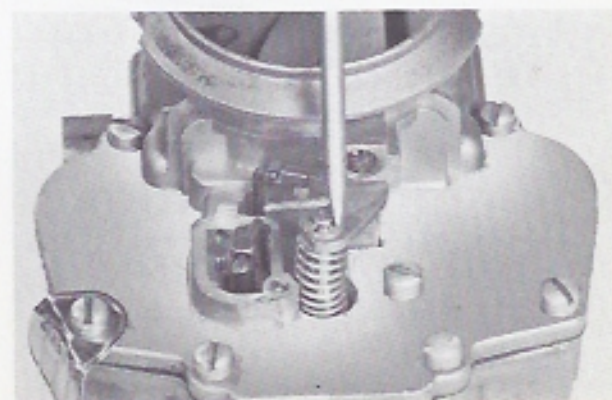


FIGURE 14 — Removing Pump Spring Retainer

Lift the power jet rod and piston out.

Remove the air horn assembly to carburetor bowl screws and lift the air horn from the carburetor. Discard the gasket. CAUTION: A small plastic almost transparent washer may fall off the pump rod when removing the air horn (Fig. 15).

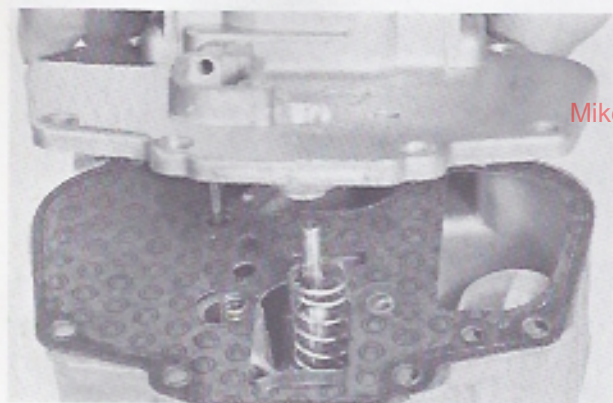


FIGURE 15 — Separating Air Horn from Carburetor

Slide the pump assembly out of its chamber. Remove the step up piston spring.

Remove the float lever pin retainer.

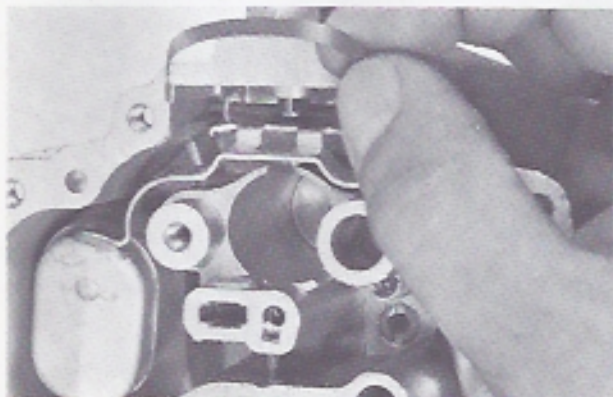


FIGURE 16 — Float Lever Pin Retainer

Using a $\frac{9}{16}$ " box end wrench remove the needle and seat assembly (Fig. 17). Discard the gasket.

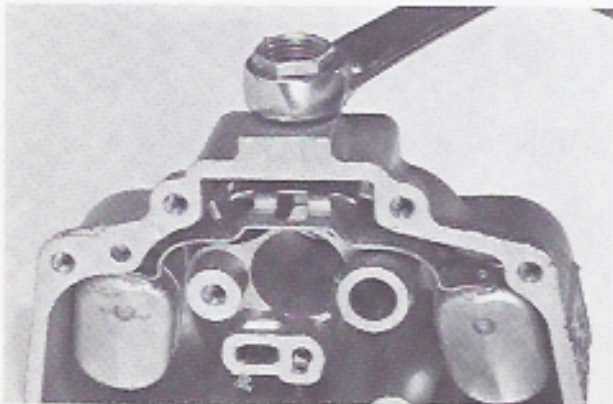


FIGURE 17 — Needle and Seat Assembly Removal

Remove the float lever assembly and float lever pin.

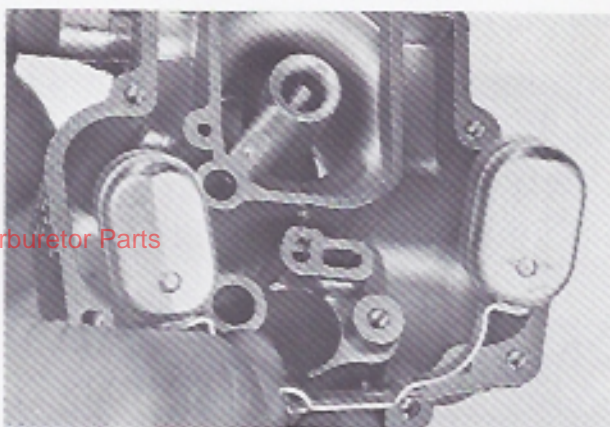


FIGURE 18 — Removing Float and Lever Assembly

Remove the pump intake check assembly (Fig. 19).

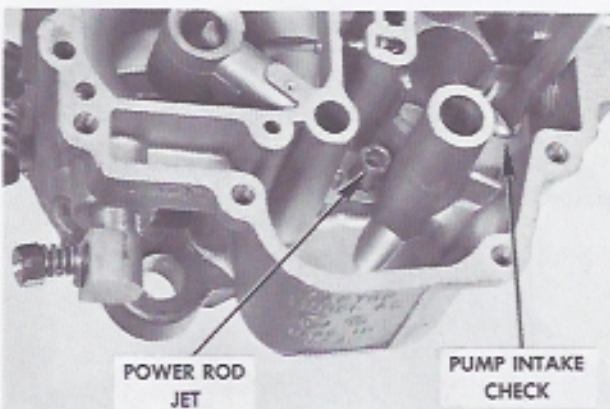


FIGURE 19 — Pump Intake Check Removal

Using tool J-1306 remove pump discharge check ball retainer. Invert the bowl and let the discharge check ball drop out.

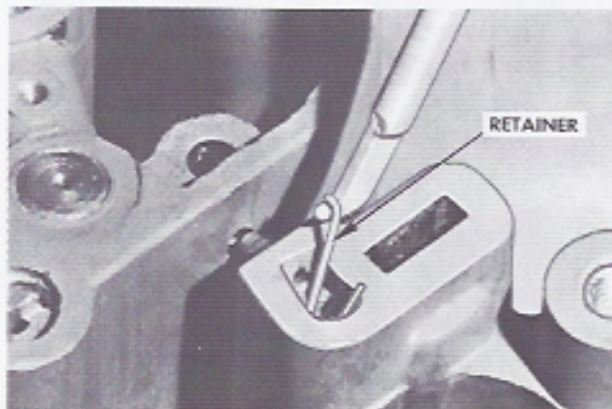


FIGURE 20 — Pump Discharge Ball Retainer

Remove the metering rod jet and power rod jet. Remove the idle adjustment screw and spring (Fig. 21).

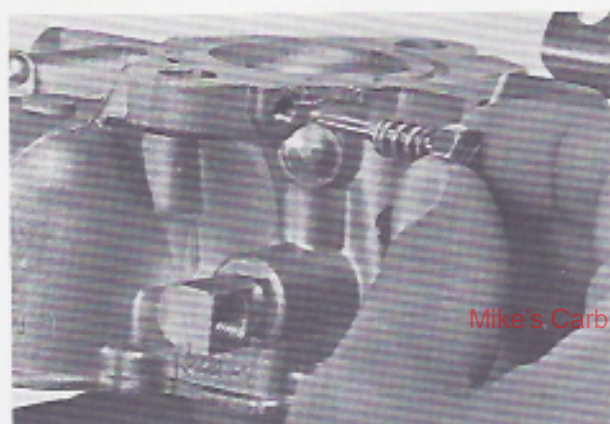


FIGURE 21 — Removing Idle Adjustment Screw

NOTE: The throttle plate should only be removed if it requires replacement due to damage or binding. When throttle replacement is necessary the new plate must be properly aligned on the throttle shaft so no light can be seen between the throttle plate and the bore with the plate in the closed position. The screws must be tightened and staked.

Remove the choke cover screws and lift the choke cover, gasket and baffle plate from the choke housing (Fig. 22). Discard the gasket.

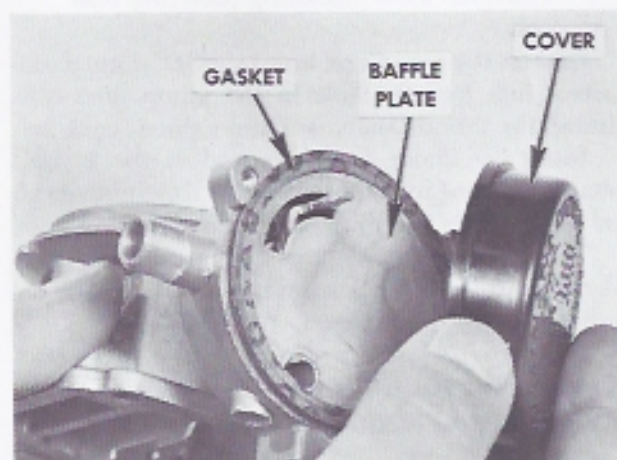


FIGURE 22 — Choke Assembly

Slide the fast idle link out of the choke housing.

To remove the choke piston the choke plate must be removed to allow the choke shaft to be rotated counterclockwise.

The low speed jet is pressed into the air horn assembly and should not be removed in service.

Inspection and Cleaning

All metal parts and assemblies should be thoroughly cleaned in a good carburetor cleaning solvent following the solvent manufacturers instructions. After the parts have been cleaned visually inspect the castings for cracks, nicks, water damage, deposits of

dirt or carbon. Blow out all passages with compressed air. Check all the plugs to make sure they fit tightly. Check all the calibrated passages with specifications. Inspect the choke plate and throttle plate for nicks, binding and proper alignment. Check the floats for leaks or damage. Check the idle adjustment needle for nicks, grooves, or wear. Replace all screws that might be stripped. Replace all gaskets and worn or damaged parts.

CAUTION: Do not use any sharp tools to scrape deposits from the carburetor, or attempt cleaning calibrated passages with wire or similar methods.

Assembly

Install the choke shaft and piston into the air horn. Locate the choke plate on the choke shaft and install the two screws. Stake the choke plate screws.

Locate the choke baffle plate and gasket on the choke housing. Install the choke cover and set the mark on index.

Open the choke plate and slide the fast idle link into the housing.

If new throttle plate is used install plate on the throttle shaft and start the retaining screws but do not tighten. Rotate the throttle shaft and plate into the closed position. Align the throttle plate in the bore so no light can be seen between the plate and bore. Tighten the screws and stake. Check the throttle shaft for binding.

Install the idle adjustment screw and spring. Turn the screw in until it just bottoms lightly, then back it out one turn. This adjustment must be rechecked with the engine running to obtain ideal idle mixture.

CAUTION: Do not turn the idle adjustment screw in too tightly onto its seat as this may groove the needle end and cause an erratic idle condition.

Install the metering rod jet, power rod jet and pump intake check assembly.

Install the pump discharge check ball and retainer into the pump passage.

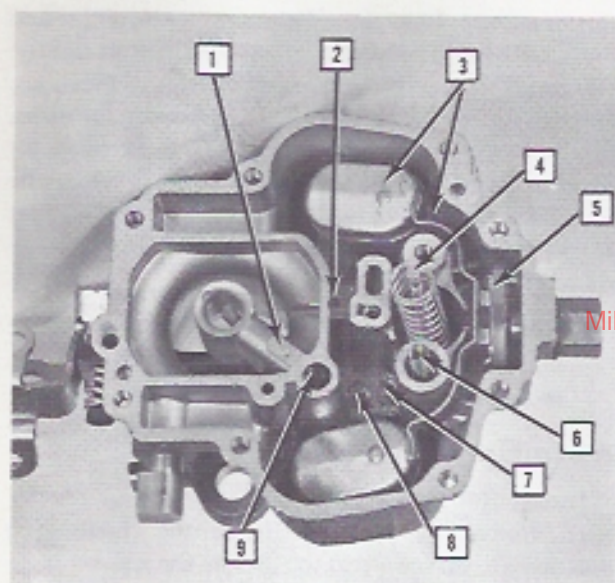
Install the float assembly and float lever pin and retainer.

Install the needle and seat assembly and tighten with a $\frac{1}{16}$ " box end wrench.

Invert the carburetor and adjust the float level using gauge J-7445-1. Make the necessary adjustments by bending the tab as shown in Figure 26.

Install the pump assembly and lower spring into the cylinder in the bowl. Rotate the pump while installing so as not to crimp or damage the leather seal. (Fig. 23.)

Place the gasket on the air horn and position the air horn on the carburetor body so that all the holes are properly aligned. Install the air horn screws and



- | | |
|----------------------------------|--------------------------|
| 1. Anti Percolator Bushing | 5. Float Pin Retainer |
| 2. Pump Discharge Jet | 6. Step Up Piston Spring |
| 3. Float and Lever Assembly | 7. Power Rod Jet |
| 4. Pump Plunger and Lower Spring | 8. Metering Rod Jet |
| | 9. Idle Well |

FIGURE 23 — Carburetor Bowl Assembled

turn them in evenly, rotating around the air horn while tightening the screws to prevent distorting the cover.

Install the step up piston spring, step up piston and power rod.

NOTE: Check the piston and rod for freedom of operation.

Install the small plastic washer on the pump rod and position the upper pump spring over it on the pump rod (Fig. 24).

NOTE: The plastic washer is almost transparent and can easily be misplaced at time of disassembly.

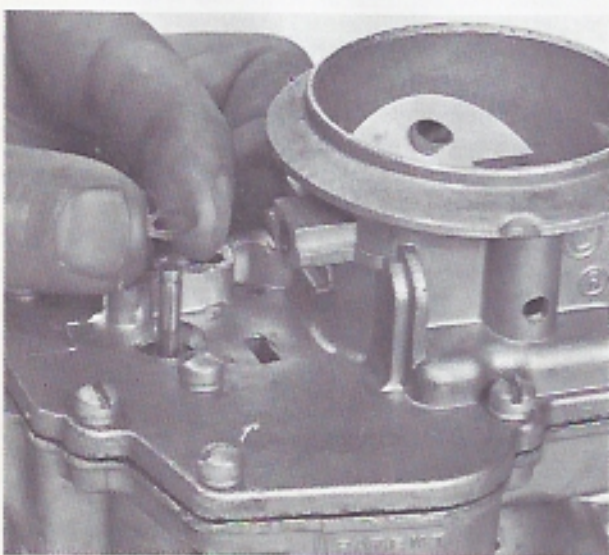


FIGURE 24 — Installing Plastic Washer on Pump Plunger

Install the pump lifter link, compress the spring, and insert the retainer clip.

To install the metering rod, place the metering rod retainer on the pump lifter link into position as shown in Figure 25. Lower rod into place until the end of the rod enters the hole in the retainer. Push metering rod and retainer down to operating position. Push the retainer toward rod until ears on the retainer fit into slot in pump arm on lifter link.

Mike's Carburetor Parts



FIGURE 25 — Installing Metering Rod

Depress the pump and insert the "S" shaped connector link into the hole in the pump lifter link. Install the throttle shaft arm and tighten screw.

Insert the choke connector rod in the keyhole shaped opening in the throttle lever. Insert other end in the fast idle link and install pin spring retainer.

This completes the assembly with the exception of the dust cover which must be installed after the adjustments are completed.

Carburetor Adjustments

Carter Model 3206S

Float Adjustment

With the bowl cover and gasket removed invert the carburetor bowl holding the thumb on the float pin retainer to keep the pin at the bottom of its guide slots. Place the float gauge J-9406-1 on the carburetor bowl as shown in Figure 26. The static weight of the float assembly resting on the fuel needle should allow the float to just contact the gauge. This distance from the top of the casting to the top of the float shell should be $\frac{3}{16}$ ".

To adjust the floats it is necessary to remove the pin retainer and insert float holding Tool J-9643-1 as shown in Figure 26 to prevent damage to the resilient seat when bending the float arm. Adjust each float individually remove the float holding tool and recheck both floats after each adjustment. Check

the float travel in the bowl for proper side clearance. Adjust as needed by bending the arms and recheck float level.

CAUTION: Whenever any bending adjustment is required on the float assembly, float holding tool J-9643-1 must be used to protect the resilient seat from damage.

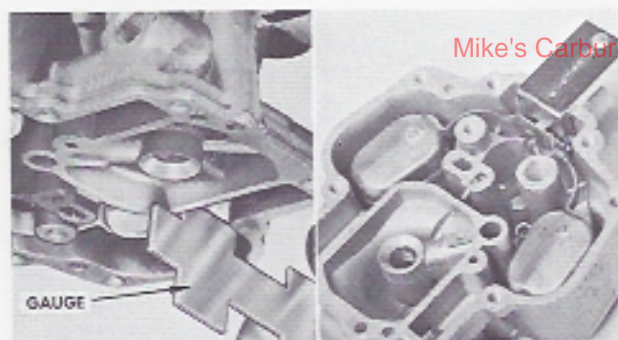


FIGURE 26 — Float Adjustment

Pump Adjustment

Open throttle valve to wide open position. Top of pump arm on lifter link should be parallel to top surface of bowl cover. To adjust bend pump arm (Fig. 27).

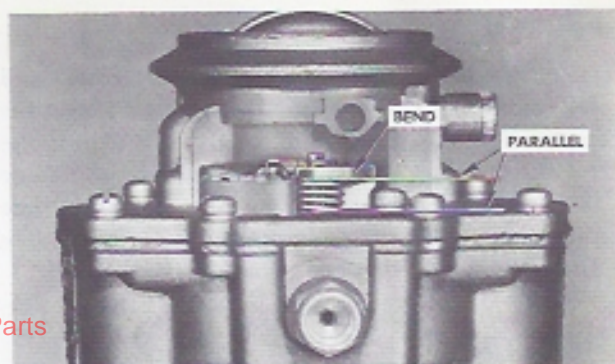


FIGURE 27 — Pump Adjustment

Metering Rod Adjustment

The metering rod adjustment must be made after pump adjustment.

With throttle valve wide open, the metering rod should just bottom in carburetor casting.

If the rod is properly adjusted, some movement can be noted around rod in the eye of metering rod retainer clip when throttle is moved slightly from wide open position (Fig. 28 "A").

If rod is too low, it will tend to push the metering rod retainer clip up ("B").

If rod is too high, it will be possible to push the rod down ("C").

To adjust, bend metering rod arm ("D").

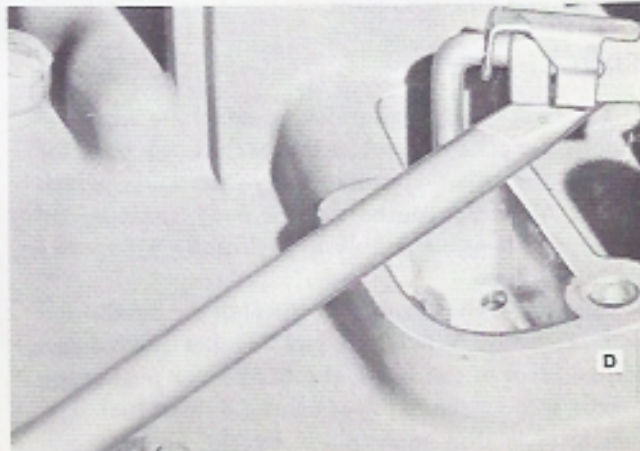
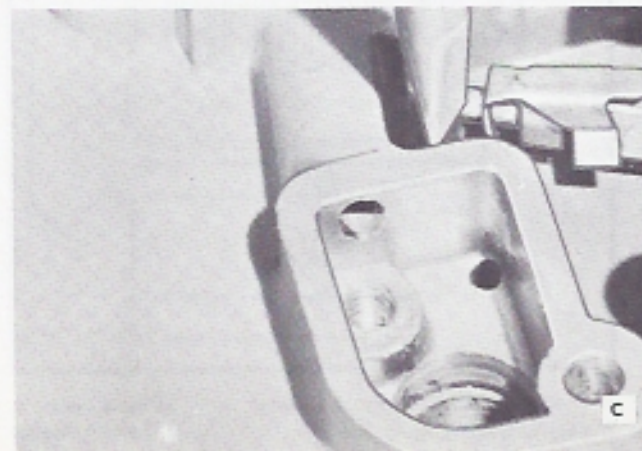
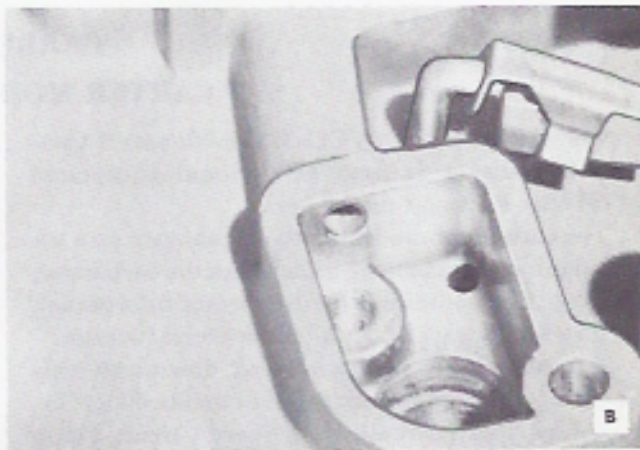
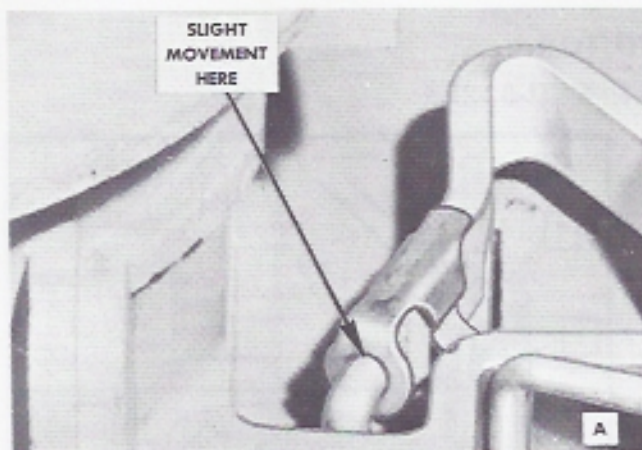


FIGURE 28 — Metering Rod Adjustment

FUEL — CARBURETION — EXHAUST

Fast Idle Adjustment

Remove the thermostatic coil housing gasket and baffle plate. Crack the throttle valve and hold the choke valve closed to rotate the fast idle cam to the fast idle position. Close the throttle. There should be .033" to .037" opening between edge of throttle plate and carburetor bore (side opposite idle port). Use Tool J-5496 and bend connector link (Fig. 29).

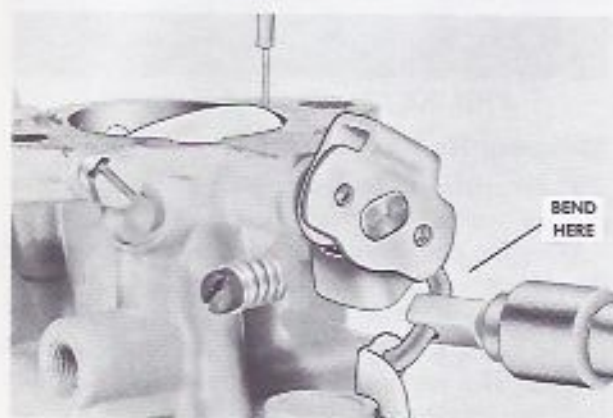


FIGURE 29 — Fast Idle Adjustment

Unloader Adjustment

Unloader adjustment must be made after the fast idle adjustment.

Hold the throttle valve wide open and close the choke valve as far as possible without forcing. The clearance between the upper edge of the choke valve and the inner wall of the carburetor air horn should be $\frac{1}{8}$ ". Use Tool J-9293. Use Tool J-5496 and bend the lever (Fig. 30).

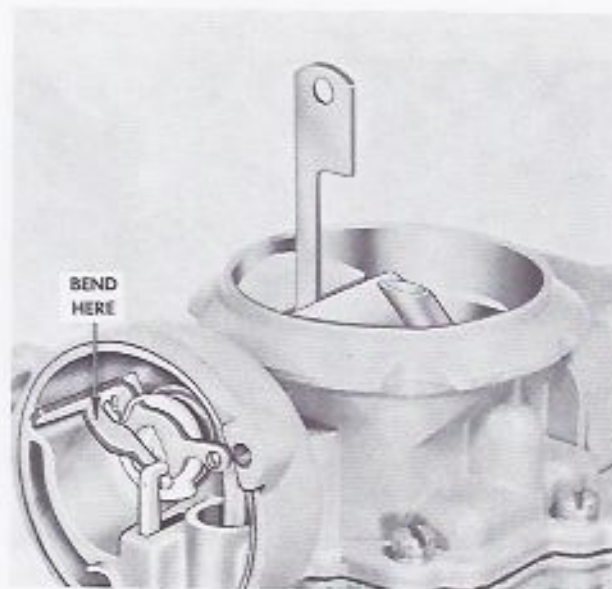


FIGURE 30 — Unloader Adjustment