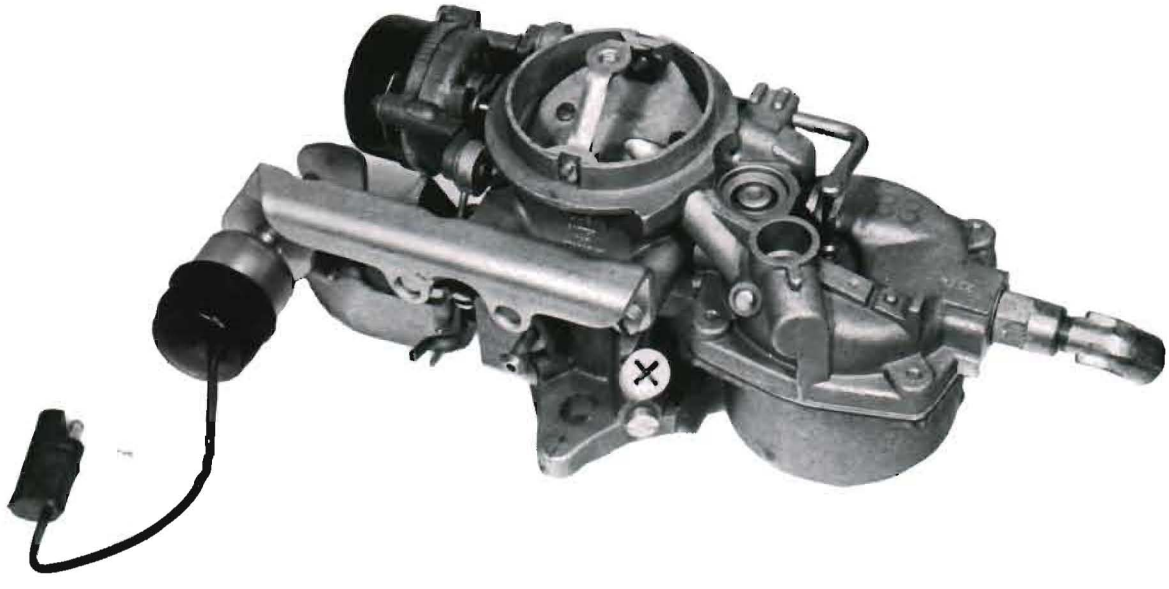
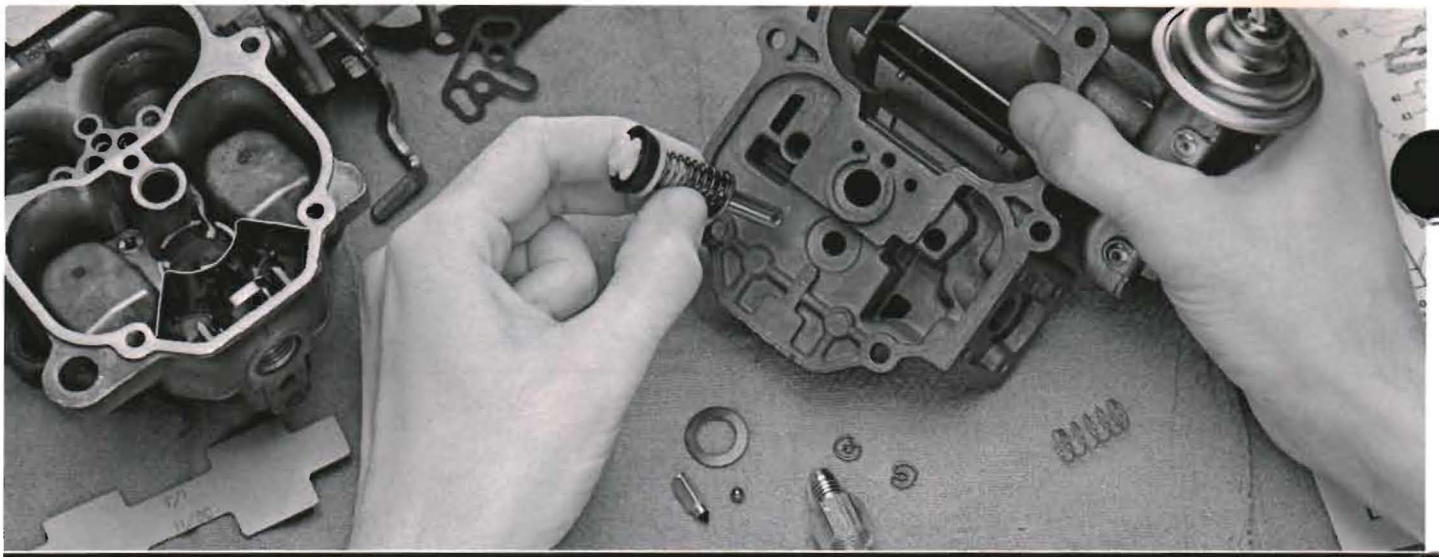
RBS
SERVICE MANUAL
CARTER CARBURETOR



acf CARTER®



Fuel system coverage for America's cars. No matter where the cars are built.

CARTER MAKES IT MOVE

The fuel system repair parts you need for both import and domestic cars come from Carter. Carter has been an O.E. supplier for both fuel pumps and carburetors for many years. And the same high quality we put into that O.E. equipment goes into our service parts.

Carter has the coverage of the market, with easy installation fit-alike fuel pumps for import cars, and the famous look-alike fit-alike Carter pumps for domestic models. In addition to Carter's broad domestic carb coverage, we are the exclusive domestic supplier for new Toyota carburetors, with coverage through '79.

Carter can supply the zip kits you need for domestic and import cars, and has broad coverage of floats and chokes to complement the line.

No matter what foreign or domestic makes are serviced by your customers, Carter has the fuel system coverage to help you profit. With the quality you want.

For fuel systems for the cars America drives, Carter makes it move.

Write Carter for more information. Carter Automotive Division, ACF Industries, Incorporated, 9666 Olive Street Road, St. Louis, Missouri 63132.

acf CARTER.

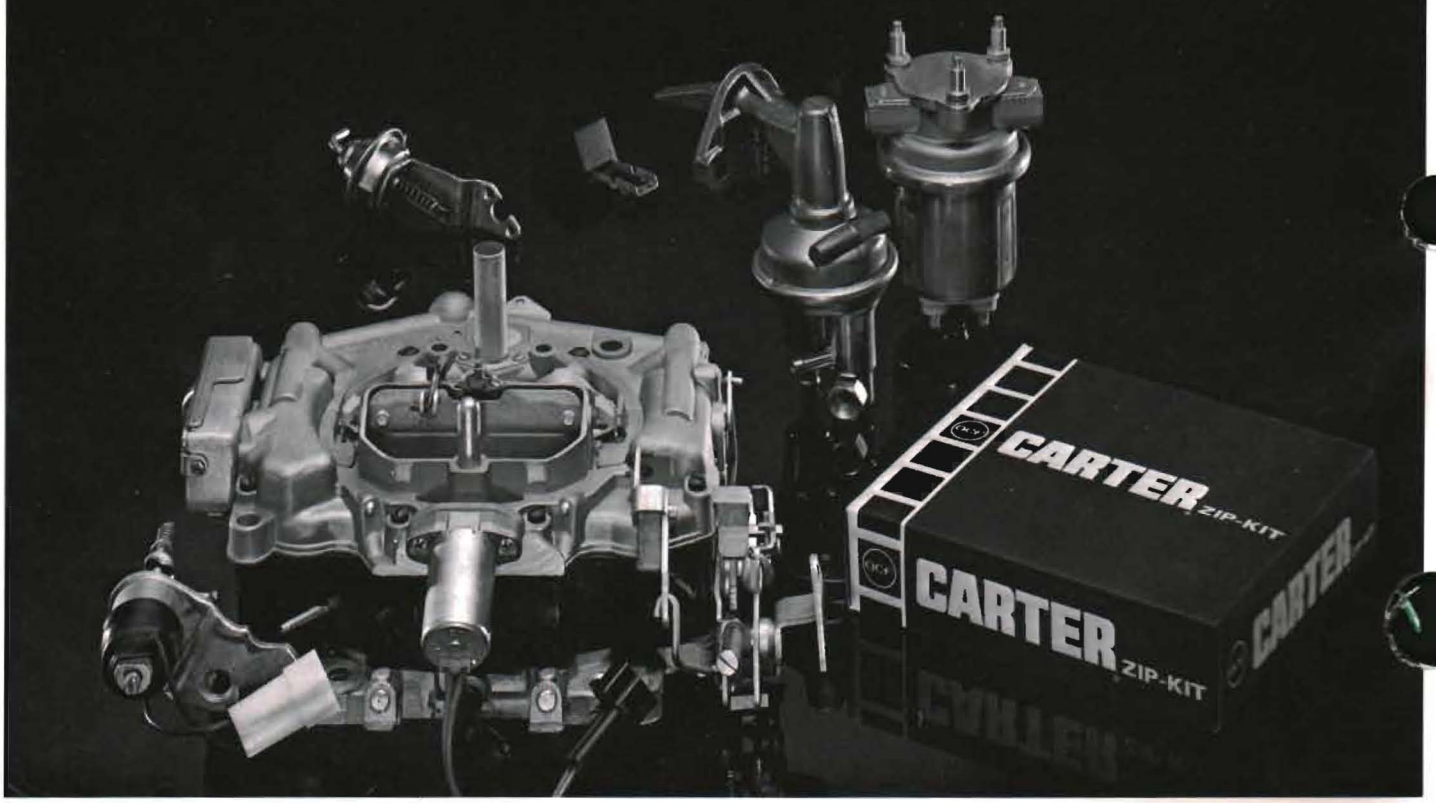
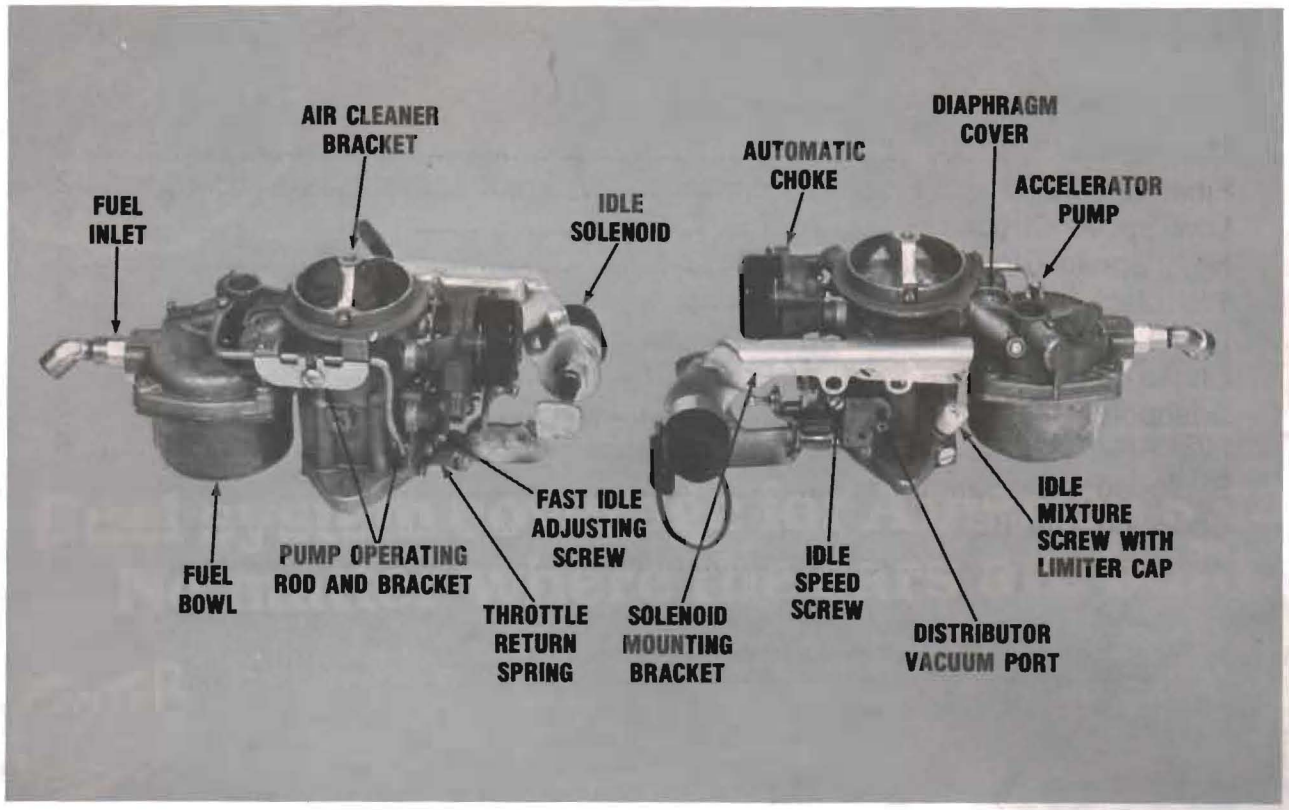


TABLE OF CONTENTS

MODEL RBS



DESCRIPTION

The Carter model "RBS" carburetor incorporates a single lightweight aluminum casting with a pressed steel fuel bowl. The letters RBS designate "Round Bowl Single." Carburetor adjustments are readily accessible and most calibration points located in the single casting make it easy to service.

Fuel pick-ups are located near the center line of the carburetor bore to gain the benefits of a concentric bowl carburetor, yet so located that engine heat being radiated through the carburetor bore and conducted through the casting is not readily conducted to the fuel in the fuel bowl.

The RBS is an air bled design using a "downhill" nozzle.

Hot operation must be a very important consideration in the design of a carburetor.

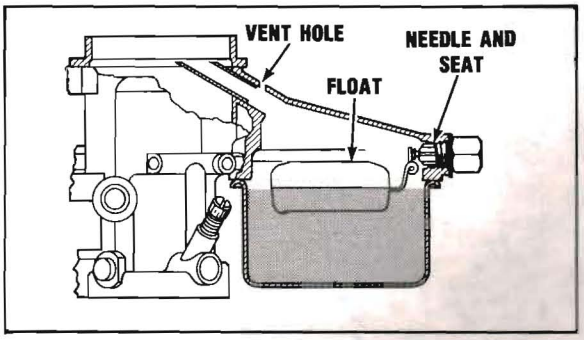
To maintain the carburetor bowl temperature at a minimum for summer operation while applying heat to the carburetor flange to prevent icing in colder weather necessitates a compromise in design. This compromise has been minimized in the RBS by suspending the metering system and accelerating pump. These important areas hang into the fuel which is contained in the rapid heat dissipating sheet metal fuel bowl.

There is no direct contact of the metering points with the bowl because of the isolation features. The fuel passages of the conventional carburetor are usually in the bottom of the bowl which is subjected to conducted and convected engine heat. Vapor vents allow rapid dissipation of gasoline vapors to assure smooth idle and to minimize hard starting while the engine is hot.

The five conventional circuits are used in this model carburetor:

1. Float circuit
2. Low speed circuit
3. High speed circuit
4. Accelerating pump circuit
5. Choke circuit

CIRCUITS



FLOAT CIRCUIT

The float assembly is compact for extreme rigidity assuring little or no change in float setting

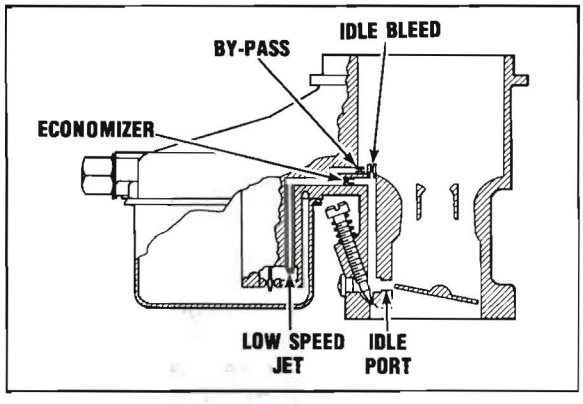
due to vibration or heat. The cellular nitrophyl float is impervious to denting under normal handling and is not susceptible to punctures, assuring a constant buoyance factor. The float extends around the metering portion of the casting to produce the effect of twin floats, but is made as a single unit.

The bowl is vented to the inside of the air horn through a single pressed-in tube located in the main casting. Some models include an additional small outside vent hole located in the bowl cover. These balanced or semi-balanced vents automatically compensate for increased air cleaner restrictions which might reduce fuel economy. An additional outside vent is provided for the fuel bowl (at upper end of plunger shaft) during idle and engine off mode.

Under extreme heat conditions, fuel vapors may form in the fuel bowl. The purpose of this vent is to allow these vapors to escape to the atmosphere rather than enter the intake manifold through the inside bowl vent. This vent assures fast hot engine restarts and improved hot idle performance.

A vapor vent hole, drilled into the bore of the carburetor above the throttle valve aids in faster hot engine restarts. It prevents the accumulation of fuel vapors in the bore of the carburetor by allowing them to escape to the atmosphere.

Some later models use a mechanically operated bowl vent valve located internally in the main casting above the fuel bowl. At curb idle, the pump linkage opens the valve to allow fuel vapor to exit to the vehicle's vapor storage system.



LOW SPEED CIRCUIT

Fuel for idle and early part throttle operation is metered through the low speed circuit. The low speed jet is pressed into place within a passage in the casting to prevent possible damage. It cannot be removed but it can be cleaned by blowing compressed air through the step-up rod jet or through either of the idle passage air bleeds located in the carburetor bore.

Gasoline from the fuel bowl is metered as it enters the lower end of the jet and flows up through the tube where air metered through the "by-pass" mixes with the fuel.

Both fuel and air then pass through the "economizer" and on to the "idle bleed" where a second metered amount of air is introduced. This air-fuel mixture is discharged into the intake manifold through the "idle port" and the idle adjustment screw port.

An idle adjusting screw is used for trimming the idle mixture to individual engine requirements for satisfactory idle.

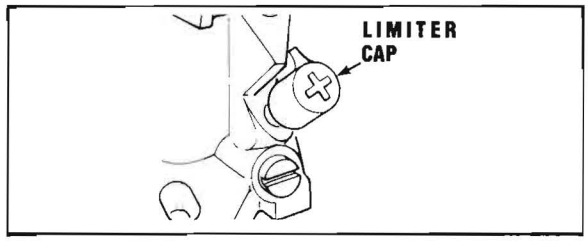
The idle adjustment screw controls the amount of air-fuel mixture admitted to the intake manifold. Turning the screw outward increases the amount of mixture; turning the screw toward the seat decreases the amount of mixture.

During curb idle, only a small amount of the idle port is exposed to intake manifold vacuum. As the throttle is opened, more of the idle port is exposed to manifold vacuum to allow a calibrated increase in the amount of air-fuel mixture admitted to the engine.

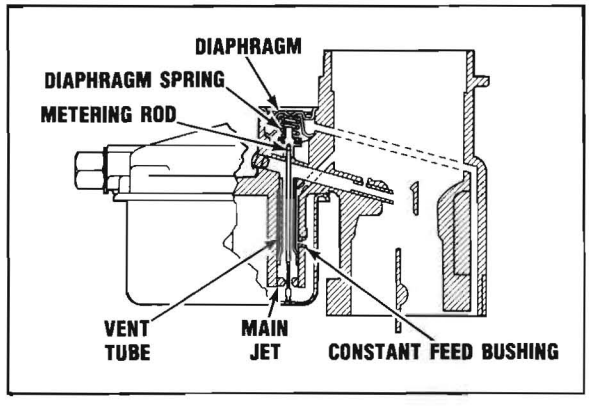
The idle jet, economizer and both air bleeds are calibrated and pressed into place. All must be free from dirt and gum accumulation.

On some applications the idle air bleed consists of a pressed-in tube which extends upward inside the air horn to a point above the closed choke valve. The choke valve is notched to accommodate the tube.

Emission laws require use of an idle adjusting screw with limited adjustability. This allows for proper idle adjustment while assuring the emission limits will not be exceeded.



To meet these requirements, later models use a limiter cap to prevent over rich idle adjustment.



HIGH SPEED CIRCUIT

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

As intake manifold vacuum is a direct indication of engine load, a vacuum controlled diaphragm step-up rod provides instantaneous response to engine demands.

During part throttle operation, the relatively high vacuum from the intake manifold is transferred through a passage in the casting to the upper surface of the spring loaded diaphragm to which the step-up rod is attached. Manifold vacuum, in opposition to the calibrated spring, provides an economical air-fuel mixture control to the engine at all times except when full power is requred. When the diaphragm is up, the larger diameter (lower end) of the step-up rod is in the jet to provide the economy mixture.

As the throttle is opened, manifold vacuum is decreased. When the difference in pressure applied to the two sides of the diaphragm is not great enough to offset the downward pressure of the calibrated spring, the diaphragm moves downward and the step-up rod, attached to the diaphragm, is lowered in the jet.

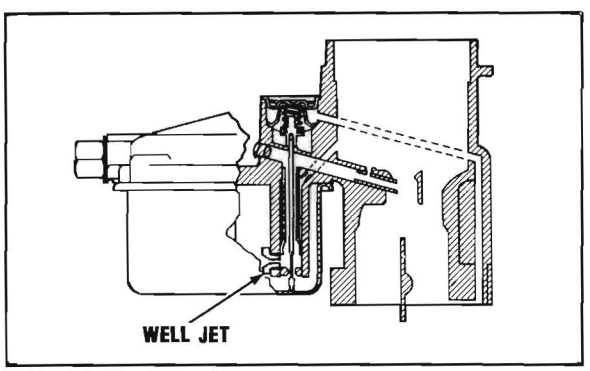
The smaller diameter of the rod permits the metered increase in fuel flow to provide for additional power requirements.

During acceleration, the same action takes place to richen the fuel mixture for the power needs. However, the step-up rod is raised in the jet as soon as the manifold vacuum indicates the need for a less rich fuel mixture.

A vent tube with calibrated holes is pressed in place within the high speed well around the step-up rod.

A metered amount of air is admitted from the bore of the carburetor to the annulus around the vent tube. This air passes through the side holes in the vent tube to mix with fuel before it flows through the nozzle into the air stream. This aerated fuel known as an "emulsion" permits immediate fuel atomization as it emerges from the tip of the nozzle to assure equal distribution of fuel to each of the engine cylinders.

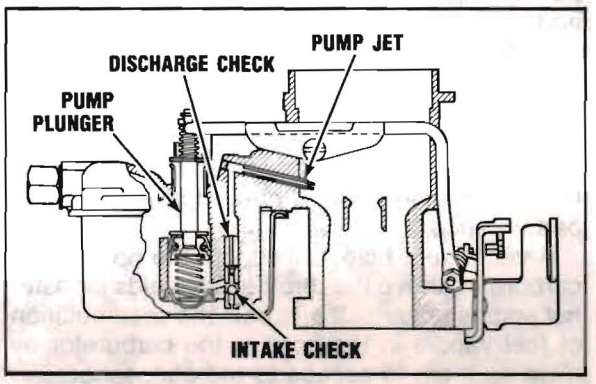
This action is further enhanced by two additional air bleeds—one in the venturi strut and the other in the upper tip of the nozzle.



WELL JET

Some units use a well jet in addition to the step-up rod jet. The well jet is located in the bottom of the bowl next to the step-up jet. Other models use an additional fuel feed called the "constant feed." This is a metered bushing pressed into the casting and allows a calibrated amount of fuel to flow from the bowl into the well at all times.

During idle operation, or with the engine shut off (with hot engine on an extremely warm day), fuel sometimes boils in the fuel bowl and in the various passages of the carburetor. The air bleed to the high speed circuit also acts as an anti-percolator passage to prevent vapor bubbles forcing liquid gasoline from the nozzle. The design of the RBS also places the fuel level in the high speed well far below the nozzle cross-over passage.



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 accelerating pump plunger is raised in the cylinder and fuel from the bowl flows into the pump cylinder through the intake ball check located at the lower end of the cylinder.

No air enters the cylinder due to the sealing action of the pump discharge needle being on its seat.

As the throttle is opened, the plunger moves downward in the cylinder, forcing fuel past the discharge needle and out through the pump jet into the air stream.

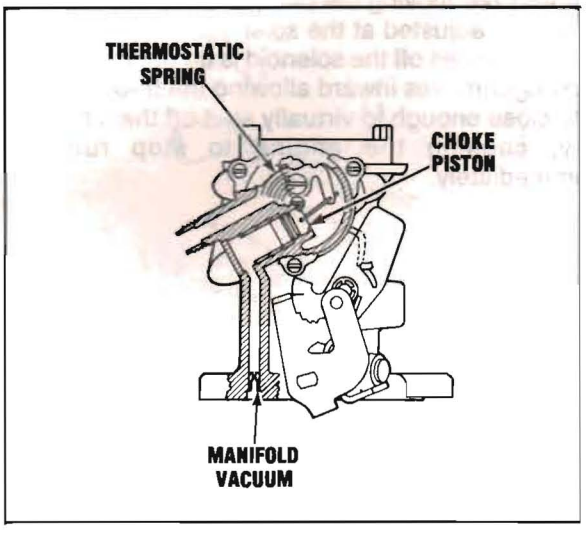
During the discharge stroke, the intake ball is on its seat to prevent fuel from flowing back into the bowl. The spring on the connector link, or the heavy drive spring above the plunger (some models) and the size of the pump jet provide a pump discharge of the desired duration. The light upper pump spring merely holds the bowl vapor vent washer on its seat and plays no part in pump action.

On some applications the pump intake check was removed from the lower end of the pump cylinder and placed adjacent to the cylinder. The intake check plug can be removed for service. In the same passage, directly above the intake check is the discharge needle. This cannot be removed for service.

PUMP JET AIM

An incorrectly aimed pump jet can cause a "flat spot on acceleration." The pump discharge should strike the venturi strut 1/32 to 3/32 inch from outer edge of venturi and it should strike the upper edge so that almost all of the discharge diffuses over the top of the strut.

If correction is required, be sure that the tip of the jet is not damaged.



CHOKE CIRCUIT

The automatic choke provides the correct mixture necessary for quick cold engine starting and proper warm-up performance. When the engine is cold, tension of the thermostatic coil pulls the choke valve to the closed position. As the engine is cranked, air pressure against the offset portion of the 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.

When the engine starts, the choke valve assumes a position where tension of the thermostatic coil is balanced by the vacuum pull on the choke piston and force of the air stream against the offset choke valve. As the piston moves down in the cylinder, slots located in the sides of the cylinder are uncovered allowing manifold vacuum to draw warm air, heated by the exhaust manifold, through the thermostatic coil housing. This warm air causes the thermostatic spring to gradually lose its tension until the choke valve is in the wide open position.

Some models incorporate a "shoe" on the choke piston lever which acts as a baffle to the incoming hot air to control the rate at which the thermostatic coil tension is decreased. It is part of the choke calibration.

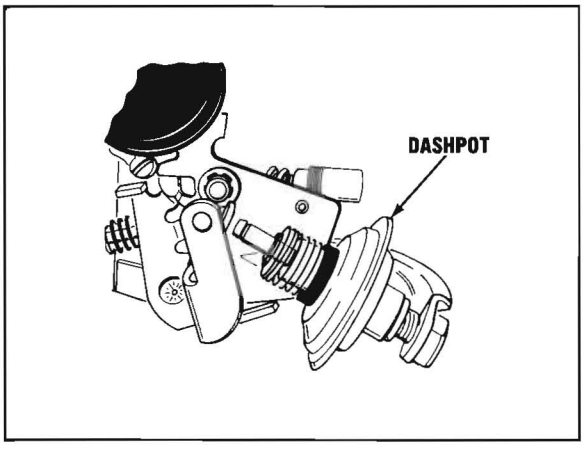
If the engine is accelerated during the warm-up period, the corresponding drop in manifold vacuum allows the thermostatic coil to slightly close the choke to provide a richer mixture.

To prevent stalling during the warm-up period it is necessary to increase engine speed. A fast idle cam, controlled by choke valve position, holds the throttle open the correct amount to provide a balance between engine speed and engine temperature. When the choke valve is wide open, the throttle valve is permitted to return to the normal curb idle position.

If during the starting period the engine becomes flooded, the choke valve may be opened manually to clear excess fuel out of the intake manifold.

This is accomplished by moving the throttle valve to the wide open position and cranking the engine.

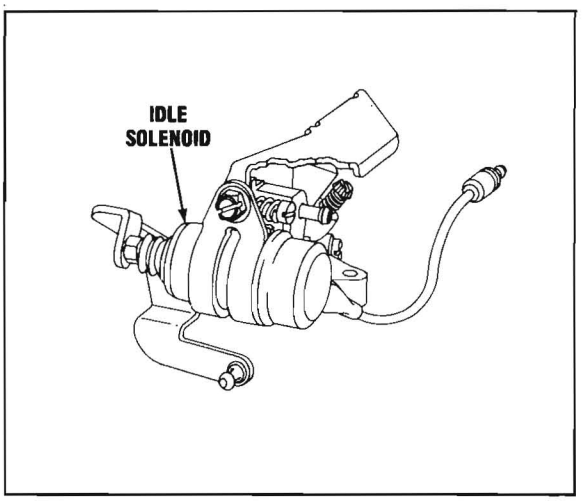
Opening the throttle causes a tang on the throttle lever to contact the fast idle cam which in turn opens the choke valve to a predetermined point. This is known as the "unloader".



DASHPOT

Some applications use a slow closing throttle device commonly called a dashpot. They are used to delay or slow the throttle closing the last few degrees to prevent engine stalling at the lower speeds and also to eliminate a sudden peak of hydrocarbon emissions on sudden deceleration.

At idle, the manifold pressure is very low and results in good vaporization of the air-fuel mixture in the intake manifold. When the throttle valve is opened, manifold pressure increases. This increase in pressure increases the boiling point of the liquid and prevents 100% vaporization of the air-fuel mixture. During these periods of high manifold pressures, there are some wet particles of fuel clinging to the inside of the intake manifold which is known as "wet manifold." During sudden deceleration, the manifold pressure goes back to a low pressure state, the wet particles clinging to the inside of the intake manifold go back to a vapor state and are taken into the engine as a rich mixture. This is known as "manifold flash" and can cause the engine to die out, especially at low speeds. The dashpot slows the closing of the throttle the last few degrees to give the engine time to clear itself of manifold flash.



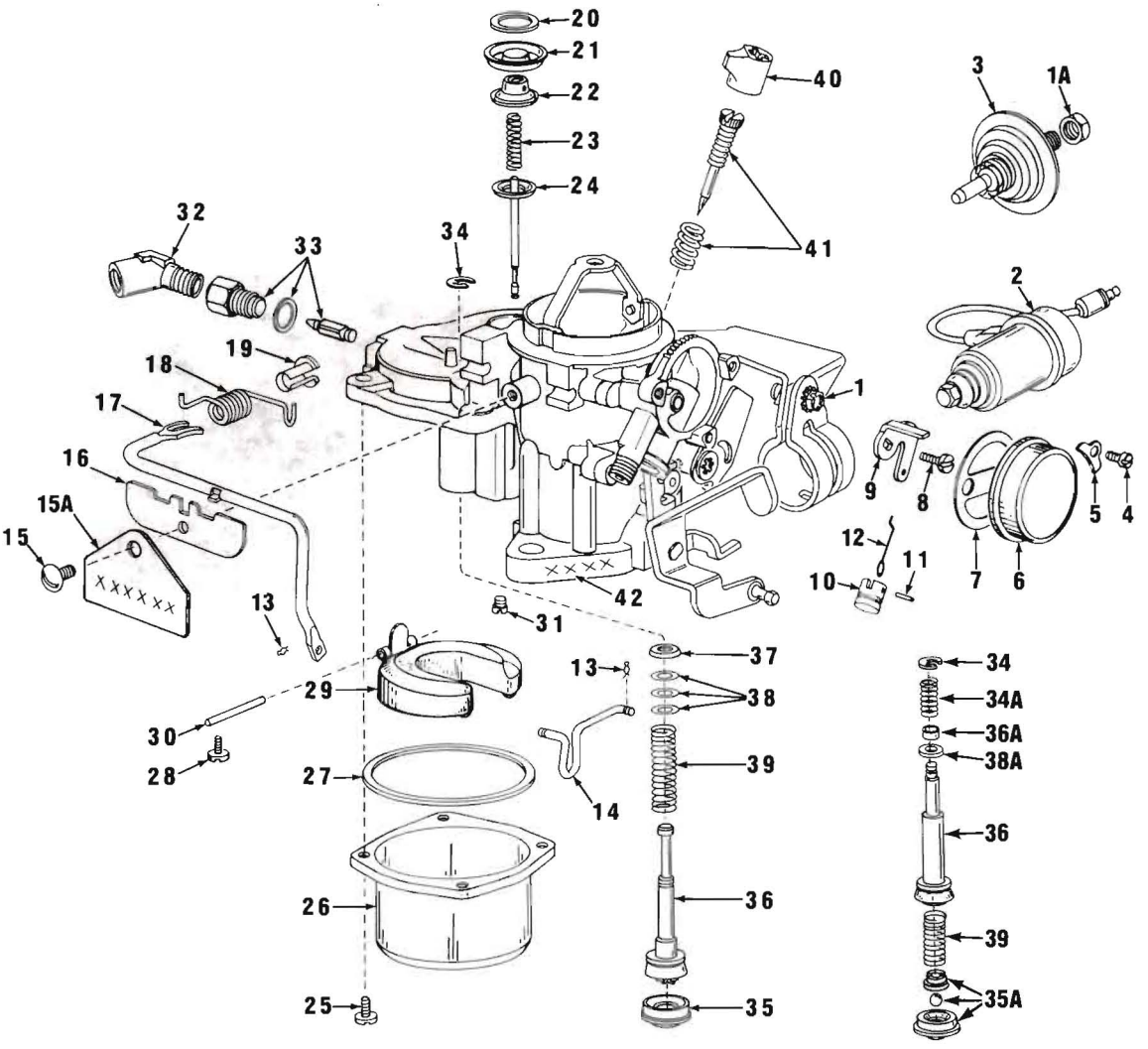
IDLE SOLENOID

Many carburetor models use an idle solenoid to prevent "dieseling" or "after-run."

Many things that have been done to lower emissions have enhanced the possibility of dieseling. Higher idle speeds, leaner air-fuel mixtures, retarded ignition timing, higher operating temperature, all contribute to dieseling.

When the ignition is turned on, the solenoid is energized moving the plunger outward. The idle RPM is adjusted at the solenoid. When the ignition is turned off the solenoid is de-engerized, the plunger moves inward allowing the throttle valve to close enough to virtually shut off the air supply, causing the engine to stop running immediately.

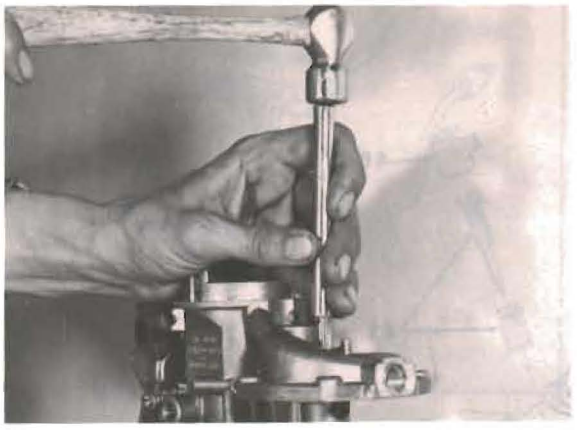
EXPLODED VIEW



PARTS LIST

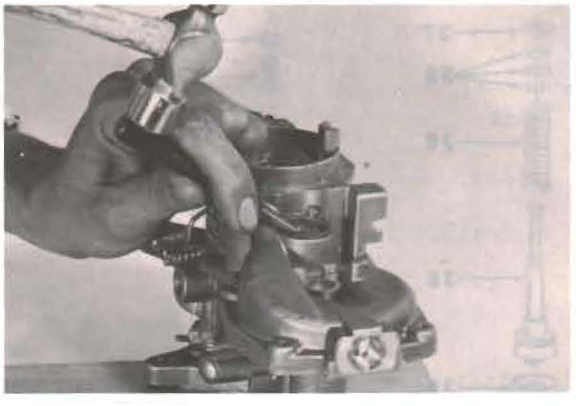
1. Solenoid bracket screw
1A. Dashpot locknut
2. Solenoid (If equipped)
3. Dashpot (If equipped)
4. Coil housing attaching screw (3)
5. Coil housing retainer (3)
6. Thermostatic coil housing assembly
7. Coil housing gasket
8. Choke piston lever screw
9. Choke piston lever
10. Choke piston
11. Choke piston pin
12. Choke piston link
13. Pin springs (2)
14. Pump arm connector link
15. Pump arm retainer screw
15A. Motor Craft Part No.
16. Pump arm retainer
17. Pump arm
18. Pump arm spring (If equipped)
19. Pump arm spacer
20. Step-up rod and diaphragm cover washer
21. Step-up rod and diaphragm cover
22. Step-up rod and diaphragm retainer
23. Step-up rod and diaphragm spring
24. Step-up rod and diaphragm
25. Fuel bowl attaching screws (4)
26. Fuel bowl
27. Fuel bowl gasket
28. Float pin attaching screw (2)
29. Float
30. Float pin
31. Idle well jet
32. Fuel inlet fitting
33. Needle & seat assembly
34. Pump plunger retainer
34A. Pump plunger spring (upper)
35. Pump intake check assembly
35A. Pump intake check
36. Plunger assembly
36A. Pump bushing
37. Plunger spring retainer
38. Plunger spring washer (3)
38A. Pump washer
39. Plunger spring
40. Idle limiter cap
41. Idle mixture screw and spring
42. Carter Part No.

SERVICING THE RBS



Place a drift on top of the pump plunger and press down until the plunger bottoms in the cylinder.

Holding in this position, tap lightly until the seat, ball, retainer, spring and plunger come out the bottom of the cylinder. It is a good idea to place the fuel bowl underneath the cylinder to catch these parts as they come out so none are lost.



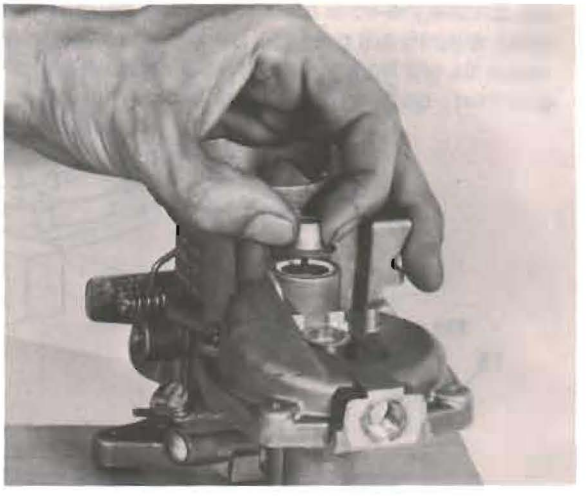
Hold a prick punch in this position and drive it into the sheet metal cap.

Some models (later production) will have a flat washer pressed into this cap. Pry it out with a screw driver before removing cap as shown.

Use bowl vent boss as a fulcrum to pry the cap out of the casting. Doing it this way will prevent damage to the casting at the edges where the cap seals.

Remove the cap, retainer, spring and diaphragm assembly or diaphragm and step-up rod assembly as the case may be.

Be sure that no part of the diaphragm or gasket adheres to the seat in the casting.



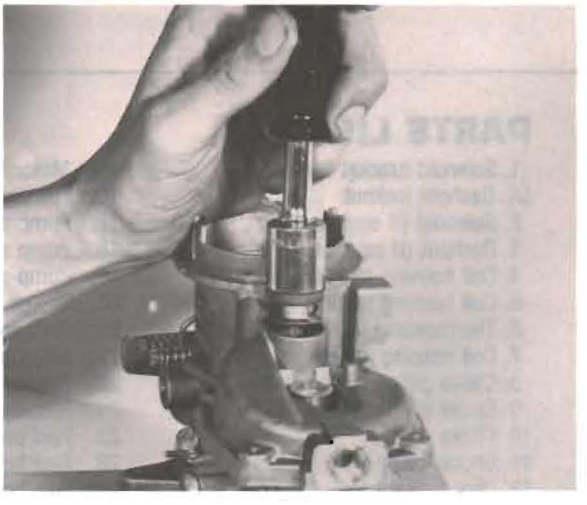
REASSEMBLY

With carburetor in upright position, drop the step-up rod and diaphragm assembly in place.

Invert carburetor and using stem of diaphragm, guide step-up rod through the pressed-in metering jet.

Place the brim of the hat-shaped retainer, without spring, against the diaphragm and using it as a tool, press the diaphragm and its gasket firmly against the gasket ledge in the casting.

Remove the retainer and examine the diaphragm for even assembly.



Install diaphragm spring, retainer and new cap and press down into place as shown.

Hold parts in place, and tap until cap is pressed into casting making sure flange edge seats. A 5/8 inch socket can be used to perform this operation.

In service the flat washer originally removed cannot be installed. This is a press fit at the factory. To assure the diaphragm cap staying in place, different parts must be used.

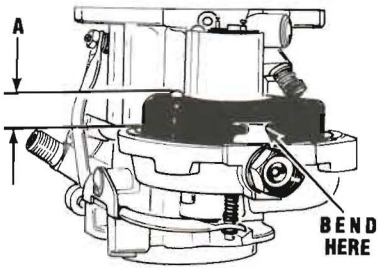
Place a split wire ring in the diaphragm cover, then place a conical washer over the ring, small end of cone upward.

Using a 7/16 inch socket, drive the conical washer down into the cap until the washer is flat. Do not drive washer beyond flat position.

Install pump plunger and associated components as shown in the exploded view. Drive intake check assembly or retainer into place using a 5/8" socket or suitable tool.

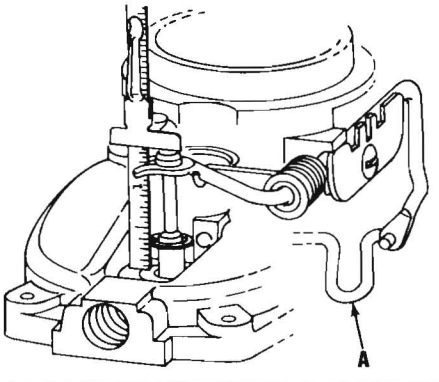
Make all adjustments to specifications.

ADJUSTMENTS



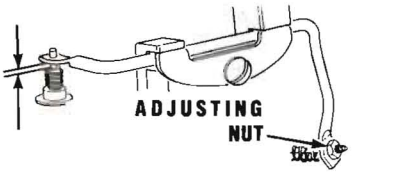
FLOAT LEVEL

With carburetor inverted, bowl cover gasket removed and float resting on seated needle, the dimension (A) from the casting to the top of the small "bump" at toe of float should be as specified. A "scale" may be used for gauging. To adjust, remove float from casting and bend float bracket. *Never allow needle to be pressed into seat.*



PUMP (TYPE 1)

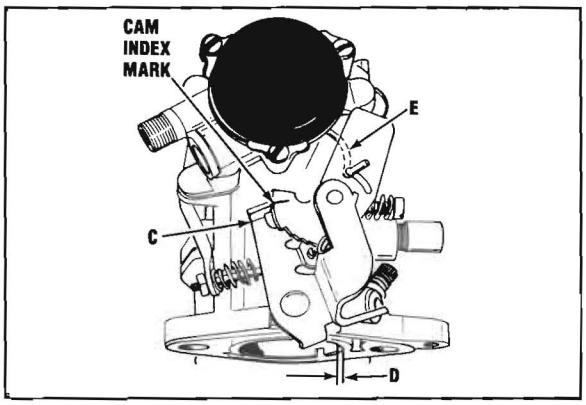
Open choke valve and back off throttle speed screw to allow throttle valve to seat in bore. Use a scale and measure the dimension from bowl cover to the top of plunger shaft, it should be as specified. To adjust, bend link (A).



PUMP (TYPE 2)

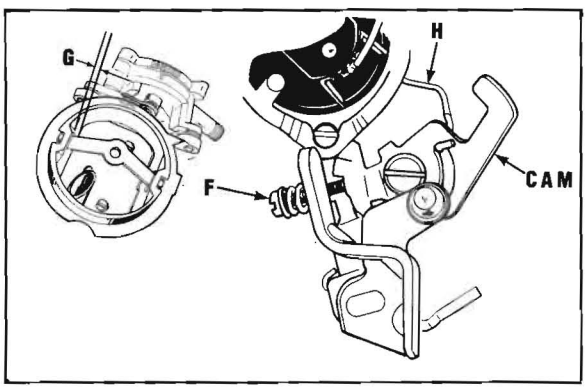
Back out throttle speed screw and hold throttle

valve tightly closed. The dimension between shoulder on pump plunger shaft and pump arm should be .015". To adjust, turn adjusting nut.



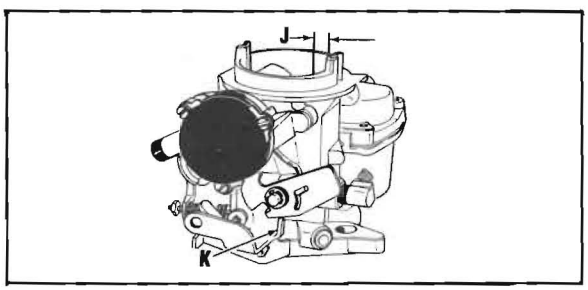
FAST IDLE TYPE 1

1. Close choke valve, and align tang (C) with cam index mark. To adjust, bend rod (E).
2. With tang (C) aligned with cam index mark, the dimension (D) between upper edge of throttle valve and bore, should be as specified. To adjust, bend tang (C).



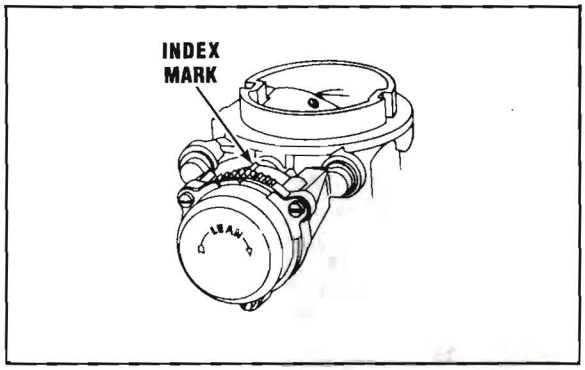
TYPE 2

1. Position fast idle screw (F) on the second highest step of Cam. The dimension (G) should be 1/8" between the lower edge of choke valve and air horn. To adjust, bend rod (H).
2. With fast idle screw (F) on the second highest step of fast idle cam, adjust fast idle screw to R.P.M. specifications.



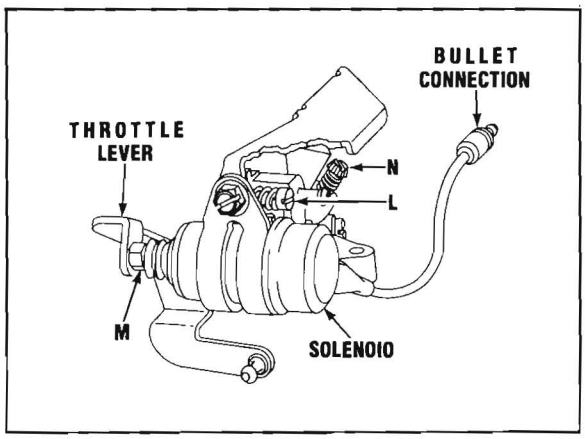
UNLOADER

With throttle valve wide open, move the choke valve toward the closed position without forcing. The (J) dimension between lower edge of choke valve and inner wall of air horn, should be as listed in specifications. To adjust, bend tang (K).



AUTOMATIC CHOKE SETTING

Rotate cover against spring tension until mark on thermostat cover is aligned with index mark on housing, as listed in specifications. Tighten screws securely.



IDLE SPEED AND MIXTURE

If the idle limiter cap has been removed, refer to the Car manufacturer's service manual for the proper idle mixture procedure.

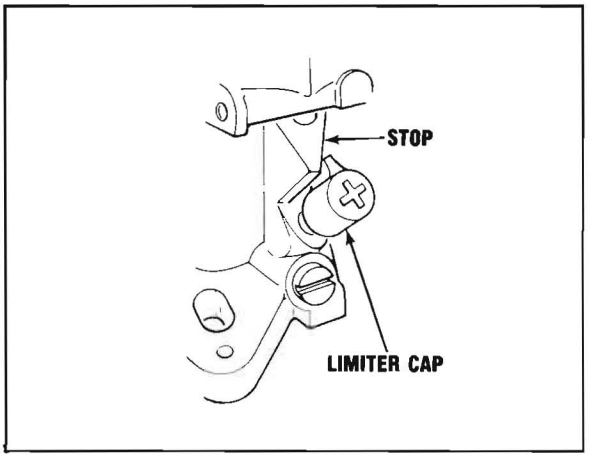
If not available make temporary adjustment as follows:

1. Check ignition timing.
2. With engine at normal operating temperature, air conditioner turned off. Headlights turned on, and auto. transmission in "Drive".
3. With the aid of a tachometer adjust throttle speed screw (L) to the RPM specified on tune-up decal in engine compartment. **NOTE:** On models equipped with the (throttle solenoid) adjust the throttle speed screw (L) to obtain 500 RPM with the solenoid wire disconnected at the bullet connector, and transmission in "neutral."
4. Connect the solenoid wire, open throttle and release to allow the plunger of solenoid to extend and open throttle.
5. Adjust plunger screw (M), or on late models adjust the solenoid in or out of bracket to the RPM

specified on tune-up decal in engine compartment.

6. Adjust mixture screw (N) counterclockwise (richer) until a loss of engine RPM is indicated on the tachometer. Turn the mixture screw (N) clockwise (leaner) until the highest RPM is obtained, then continue turning clockwise until engine RPM starts to decrease at the (leanest) best idle.

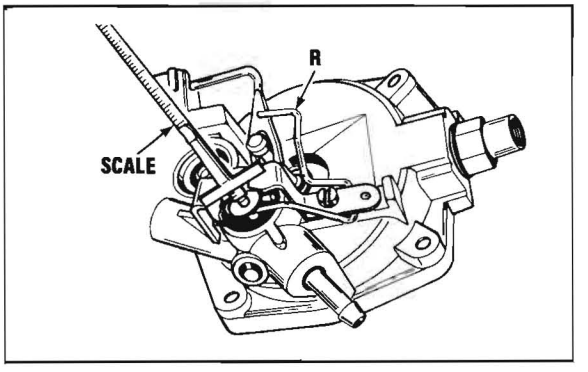
7. Readjust speed screw (L) or solenoid if necessary.



LIMITER CAP INSTALLATION

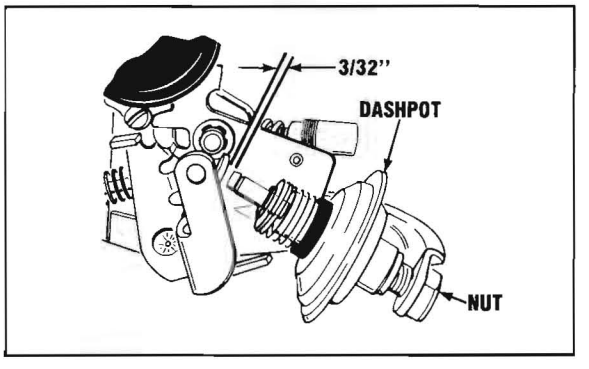
If the original limiter cap has been removed, the new service limiter cap must be installed after properly adjusting the idle speed and mixture screw, to comply with the State and Federal regulations regarding Exhaust Emissions.

Soak cap in hot water a few minutes to aid in installation. Place cap on mixture screw head and press firmly, using care not to turn mixture screw when forcing cap in place. The limiter cap tab should be in the maximum counterclockwise position against the limiter stop.



BOWL VENT

After the idle speed and mixture adjustment has been made, disconnect the solenoid wire at the bullet connection. The dimension from top of bowl vent stem to top of bowl vent retainer should be 1/8''. To adjust, bend vent lever (R). Reconnect the solenoid wire.



DASHPOT-(If equipped)

With throttle valve set at curb idle and diaphragm stem fully depressed, loosen nut. Adjust dashpot to obtain 3/32 inch, between stem and throttle lever tang. Tighten locknut.

BUILT TO MEET OR EXCEED O.E. SPECS.

ELECTRIC PUMP

- Weight - 2 lb., 6 oz.
- Rotary Vane design
- Pressure Regulated
- No inlet or outlet valves
- 72 gph Free-Flow
- Operates at 160° temperature
- 1/4" inlet and outlet fittings
- Lift - 8'
- P4070 - 12 volt, 5 psi
- P4259 - 6 volt, 5 psi
- P4389 - 12 volt marine, 5 psi
- P4594 - 12 volt, 7 psi

MECHANICAL PUMP

- Aluminum castings to dissipate heat
- Light weight
- Channel steel levers
- Unitized diaphragm/shaft/spring/seal
- Resilient valves, self conforming to seat
- Rolling-Loop diaphragm
- Delivers 45 gph with 4 psi restriction

12 VOLT IMPORT APPLICATIONS

- Universal mounting bracket and hardware
- Bayonet fittings for either 5/16" or 1/4" hose
- Single screw for pressure adjustment
- Pressure adjustable from 1-3/4 psi to 6 psi

IN-TANK ELECTRIC PUMP

- For carburetor equipped vehicles
- Current draw - 1.4 amps
- 20 gph at 4 psi

IN-TANK ELECTRIC PUMP

- Used with Throttle Body Injection
- Current draw - 4 amps
- Continuous delivery - 20 gph at 12 psi
- Excess fuel returned to tank

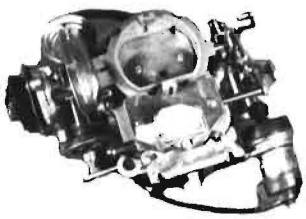
TECH. MANUAL		WITH COLOR SLIDES
TYF	FORM #3560	CTP-21
740	FORM #3624	CTP-20
BBS	FORM #3620A	CTP-5A
BBD-1¼"	FORM #3576A	CTP-6A
YF-YFA	FORM #3608B	CTP-22
RBS	FORM #3625	CTP-8A
TQ	FORM #3623A	CTP-1A
AFB-AVS	FORM #3703A	CTP-23
BASICS	FORM #3630A	CTP-2A

RBS
SERVICE MANUAL
CARTER CARBURETOR

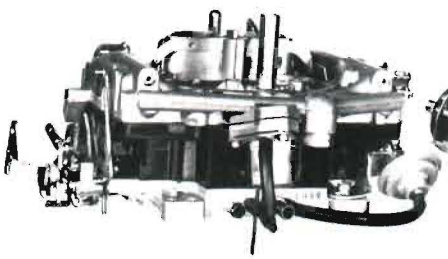
CARTER-WEBER 740

CARTER-WEBER TYF

CARTER YF-YFA

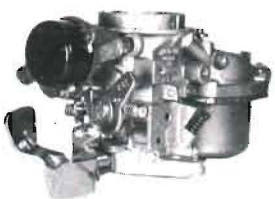


CARTER BBD 1-1/4"

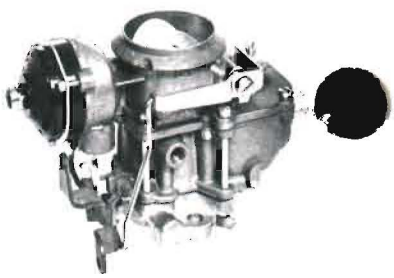


CARTER THERMO-QUAD™

CARTER AFB-AVS



CARTER RBS



CARTER BBS

CARTER

PRINTED IN U.S.A.

6/82, FORM NO. 3625