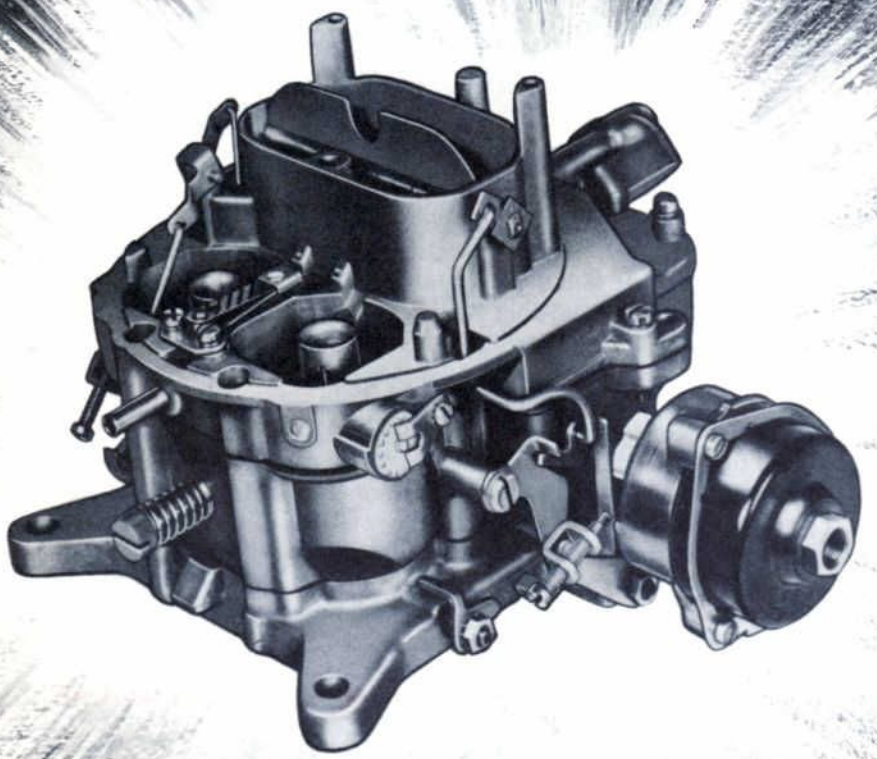
SHOP TIPS FROM FORD



FEATURING NEW AUTOLITE MODEL 4300 4-V Carburetor

- OPERATION
- DIAGNOSIS
- ADJUSTMENT

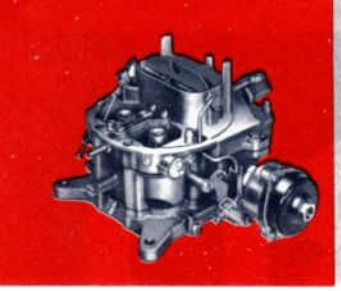
ALSO...

Safety Flare Special Offer

See page 15-16

Technical parts and service information published by the Autolite-Ford Parts Division and distributed by Ford and Lincoln-Mercury dealers to assist servicemen in Service Stations, Independent Garages and Fleets.

VOL. 5, NO. 5 JANUARY, 1967



Autolite Model 4300 4V Carburetor.

IN THIS ISSUE

Be sure and file this and future bulletins for ready reference. If you have any suggestions for additional information that you would like to see included in this publication, please write to: Autolite-Ford Parts Division of Ford Motor Company, Ford Products Merchandising Dept., P.O. Box 3000, Livonia, Michigan 48151.

The description and specifications contained in this book were in effect at the time the publication was approved for printing. The Ford Motor Company, whose policy is one of continuous improvement, reserves the right to discontinue models at any time, or to change specifications or design without notice and without incurring obligation.

AUTOLITE

FoMoCo GENUINE PARTS

ROTUNDA

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INTRODUCTION

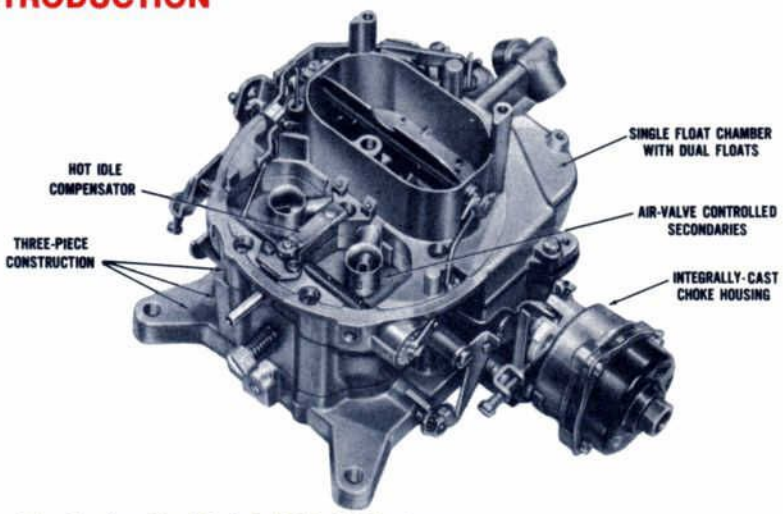


Fig. 1 Autolite Model 4300 4V Carburetor

Most 1967 models with a V-8 engine and a 4-V carburetor are equipped with a new design, Ford-built Autolite Model 4300 4-venturi carburetor. The exceptions are high performance engines and the 390 GT and GTA.

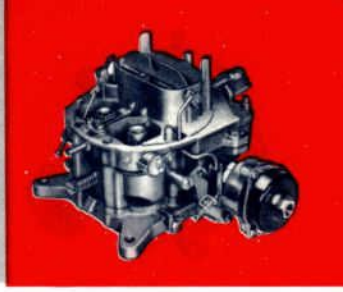
The Autolite Model 4300 operates on two primary (venturi) barrels under most conditions. Two secondary barrels are timed to furnish additional fuel-air mixtures when the primary throttles are three-quarters open. Generally, it is similar to previous Ford 4-venturi carburetors. However, physically and design-wise it incorporates several new features that allow better performance in hot fuel handling . . . economy . . . idling . . . power requirements . . . cornering . . . and choke operation. As a result of improved efficiency, this allows a higher degree of control over the unburned hydrocarbons emitted in the engine exhaust.

AUTOLITE MODEL 4300 ADJUSTMENT SPECIFICATIONS

Model	Choke Plate Clearance	Accel. Pump Lever	Fast Idle RPM	Curb Idle RPM	Anti-Stall Dash-pot	Fast Idle Cam
C7AF-AC	0.190-0.210	2	1200	575	—	0.090-0.110
C7AF-AD	0.110-0.130	3	1400	475	—	0.080-0.100
C7AF-AE	0.200-0.220	2	1200	575	—	0.090-0.110
C7AF-AG	0.190-0.210	2	1300	625	1/8	0.090-0.110
C7AF-AH	0.110-0.130	3	1400	550	1/8	0.080-0.100
C7AF-AV	0.110-0.130	2	1400	475	1/8	0.080-0.100
C7AF-AY	0.110-0.130	2	1500	550	1/8	0.080-0.100
C7AF-BH	0.090-0.110	3	1400	550	1/8	0.070-0.090
C7AF-BJ	0.090-0.110	3	1400	475	1/8	0.070-0.090
C7DF-C	0.140-0.160	2	1400	625	1/8	0.090-0.110
C7DF-D	0.090-0.110	1	1350	550	1/8	0.090-0.110
C7DF-L	0.140-0.160	2	1400	600	—	0.090-0.110
C7DF-M	0.090-0.110	1	1350	525	—	0.090-0.110
C7OF-H	0.110-0.130	3	1400	550	1/8	0.080-0.100
C7OF-S	0.110-0.130	1	1400	475	—	0.080-0.100
C7OF-AH	0.090-0.110	3	1400	550	1/8	0.070-0.090
C7OF-AJ	0.090-0.110	3	1400	475	1/8	0.070-0.090

AUTOLITE MODEL 4300 USAGE CHART

Engine	Car	Non-Emission System Std. Trans.	Non-Emission System Auto. Trans.	Exhaust Emission System Std. Trans.	Exhaust Emission System Auto. Trans.
289-4V	FAIRLANE MUSTANG	C7DF-L	C7DF-M	C7DF-C	C7DF-D
390-4V	FAIRLANE	C7AF-AC	C7OF-S or AJ	C7AF-AG	C7OF-H or AH
390-4V	FORD	C7AF-AC	C7AF-AD or BJ	C7AF-AG	C7AF-AH or BH
390-4V	THUNDERBIRD	—	C7AF-AD or BJ	—	C7AF-AH or BH
428-4V	FORD	C7AF-AE	C7AF AV or BJ	C7AF-AG	C7AF-AY or BH
428-4V	THUNDERBIRD	—	C7AF-AV or BJ	—	C7AF-AY or BH



FEATURES AND OPERATION

Construction

The carburetor is built in three main assemblies—the upper body or air horn; the main body; and the lower throttle body.

In the *air horn* are contained the accelerating pump linkage, fuel inlet valves and float, power valve piston and spring, choke plate, booster venturis, secondary barrel air valves and the hot idle compensator valve.

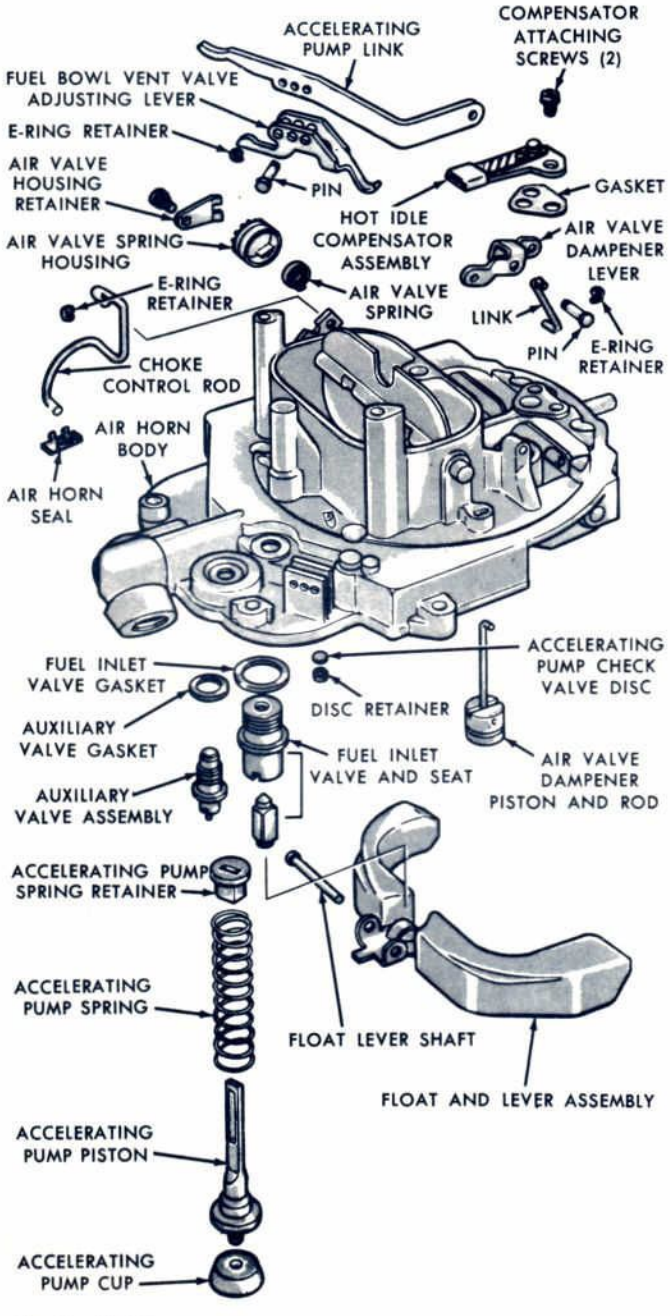


Fig. 2 Air Horn

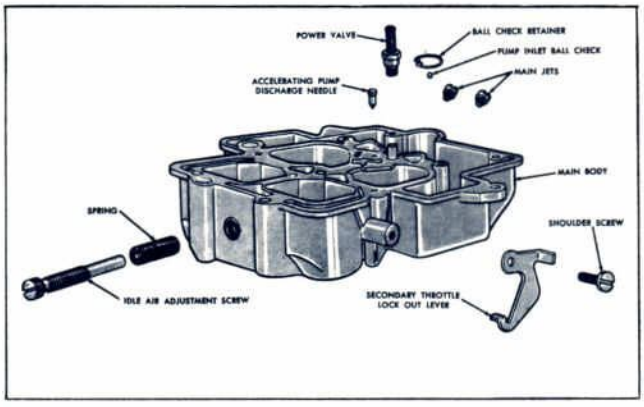


Fig. 3 Main Body

The main body—contains the main metering jets, accelerating pump piston, well, discharge valve, power valve, fuel passages for various systems and the idle air adjustment screw.

The throttle body contains the throttle plates and linkage, idle fuel adjustment needles and automatic choke assembly.

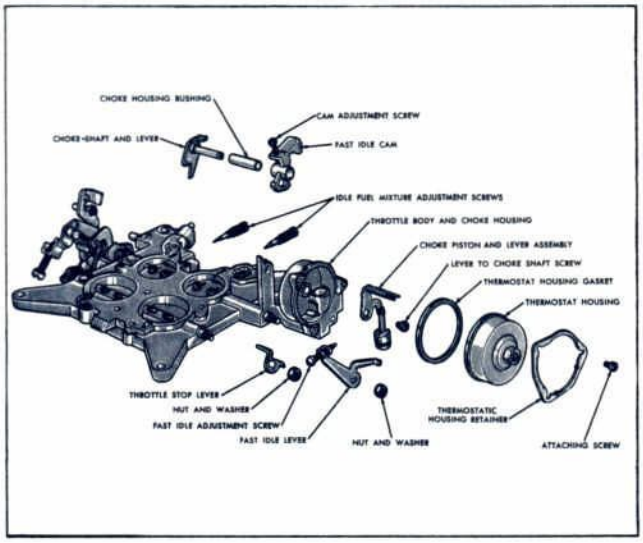


Fig. 4 Throttle Body and Choke Assembly

Fuel Inlet System

A single fuel inlet system (Figure 5) featuring a conventional inlet valve (needle and seat) and an auxiliary inlet valve meters fuel into a single bowl which serves both the primary and secondary venturis. The auxiliary inlet valve supplements the main inlet valve when engine fuel requirements are high or the carburetor is subjected to high temperatures.

Autolite Model 4300 4V Carburetor.

Fuel Inlet System (continued)

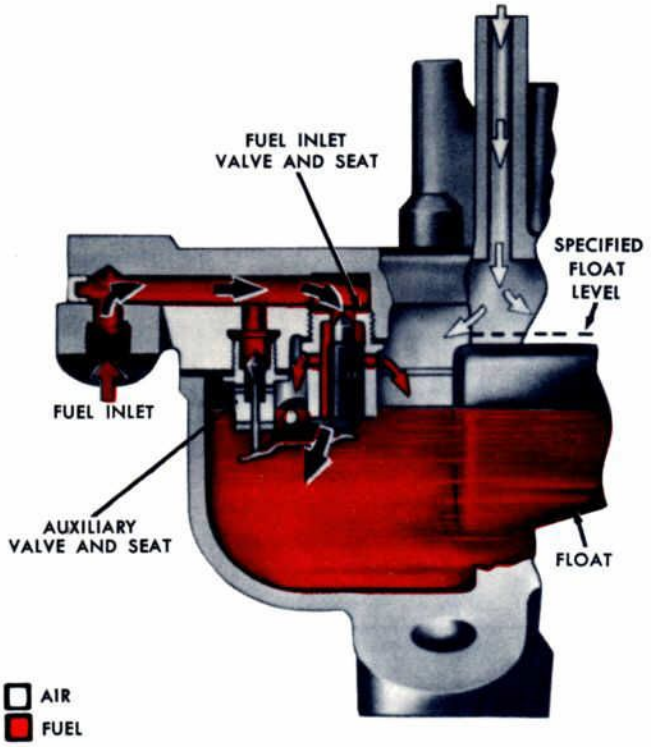


Fig. 5 Fuel Inlet System

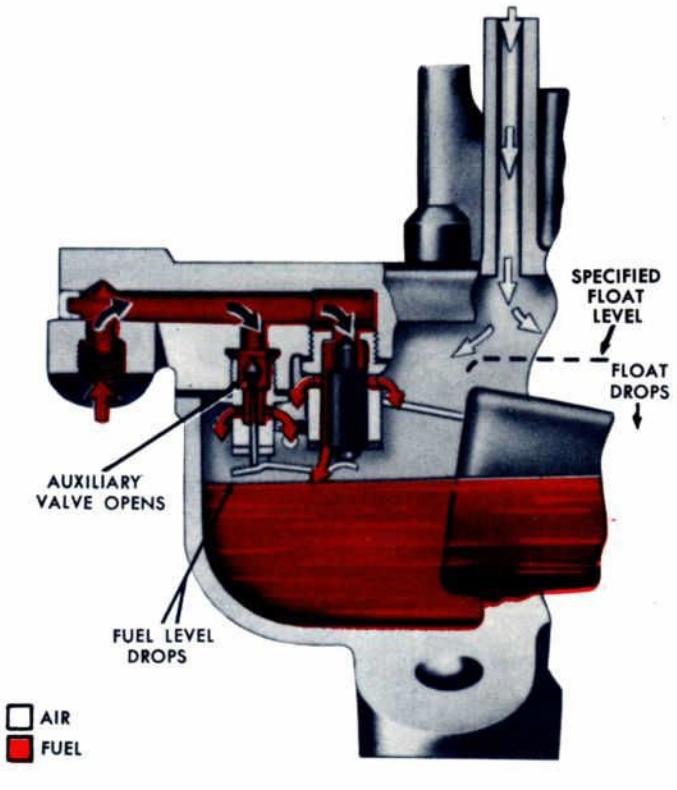


Fig. 6 Auxiliary Inlet Valve

The main inlet valve controls small fuel flows precisely because of its small area of opening and relatively high valve-to-seat sealing pressure. When large fuel flows are required, as at high engine speeds and heavy load conditions, the fuel level and float level drop, thereby opening the auxiliary inlet valve (Figure 6) in addition to the main inlet valve. The total combined fuel valve opening is larger than the previous single valve that has been used in former Ford carburetors.

In addition to supplying extra fuel when requirements are high, the combined valve opening also purges the carburetor-to-fuel pump line, after a hot restart, of fuel vapor that forms during a hot soak condition.

A dual pontoon-type float in the single bowl permits better fuel level control during acceleration, cornering and hill climbing.

The fuel bowl is vented by an internal balanced vent system. The bowl is always vented to the air horn through two stand pipes open to the carburetor air intake after the air passes through the air cleaner. Thus, bowl pressure and air horn pressure are equal, or balanced, so that any condition in the air cleaner that would cause a pressure drop will not affect the calibration of the carburetor. An external vent valve (Figure 7) is opened by a lever actuated by the accelerating pump linkage when the throttle is closed, or near-

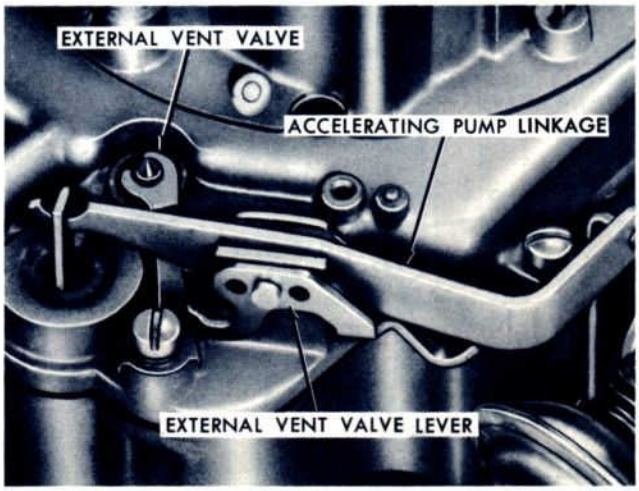


Fig. 7 External Vent Valve

ly closed. This valve provides relief during periods of idle and part throttle operation when vapor is likely to form in the bowl.

Idle Fuel Supply System

When the throttles are closed or nearly closed, there is not enough air flow through the venturis to create the vacuum needed to operate the primary main metering system. Therefore, we have a separate fuel metering system for idle operation.

The primary idle fuel supply system (Figure 8) uses the pressure difference between manifold vacuum and atmospheric pressure in the bowl to cause fuel to flow. Unlike standard carburetors, the throttle plates in the primary venturis are closed during idle, with all idle air and idle fuel entering the engine through ports *below* the throttle plates. The idle fuel adjustment screw regulates the amount of fuel that is discharged through the port.

An idle transfer slot in each venturi serves both as an air bleed and as a secondary discharge port. At closed throttle (Figure 8) the top of the slot admits air into the idle cavity, and the bottom of the slot delivers fuel to the venturi. When the throttle opens slightly above an idle condition, the whole length of the slot becomes a discharge port to enrich the mixture (Figure 9). This prevents the increase in air flow from making the mixture too lean, eliminating a "flat spot" in transition from idle to the main metering system.

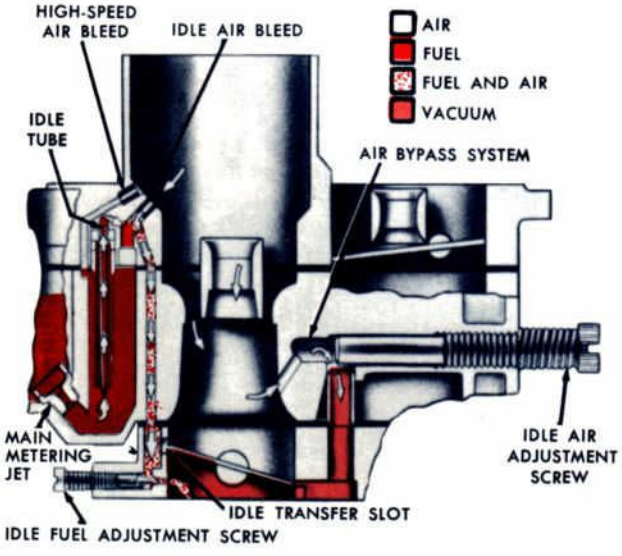


Fig. 8 Idle Fuel Supply System

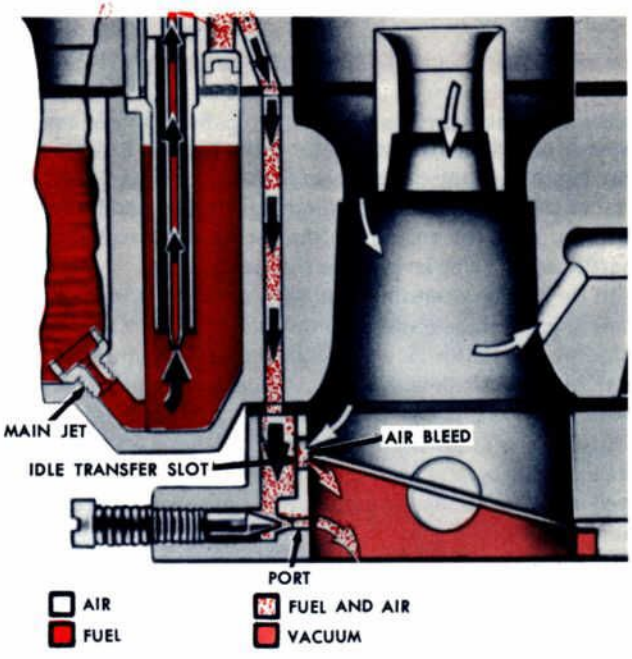


Fig. 9 Idle Transfer Slot

Primary Main Fuel Metering System

The primary main fuel metering system (Figure 10), divided into two parts . . . one for each barrel . . . provides fuel at cruising speeds or part throttle operation. The system is calibrated to deliver a lean mixture . . . about 15 parts air to one part gasoline . . . for economy when the engine is cruising along. When more power is required, the main metering system continues to operate, and the mixture is made richer by other systems.

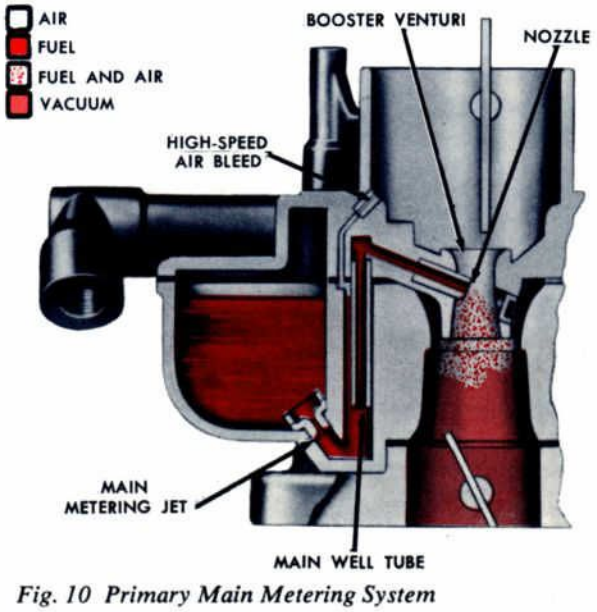


Fig. 10 Primary Main Metering System

Autolite Model 4300 4V Carburetor.

Primary Main Fuel Metering System (continued)

In the Model 4300 carburetor, the primary main metering system has two main metering jets, main wells and main well tubes, calibrated air bleeds, discharge nozzles and booster venturis. With the engine off, the fuel in each main well tube assumes the same level as the fuel bowl.

With the engine operating, the main metering system delivers fuel in response to the throttle plate opening. Opening the throttle causes air flow through the main venturi and booster venturi. Air flow through the booster venturi causes a pressure drop or partial vacuum at the discharge nozzle. The fuel bowl is at air horn pressure, so we have a pressure difference that creates flow through the system. Fuel is sprayed out the discharge nozzle and mixes with the airstream.

The size of the main jet determines how much fuel is delivered for a given volume of air flow. Increasing or decreasing throttle opening increases or decreases the fuel delivery so that the mixture proportion or ratio is quite constant.

Air is also mixed with the fuel in the main well tube through two high-speed air bleed holes (Figure 11). Adding air at this point assists vaporization, and compensates for the tendency of air to become less dense at high speeds. The bleed also doubles as an anti-siphoning vent at low speeds. And it discourages percolation when a hot engine is shut down by venting the main well.

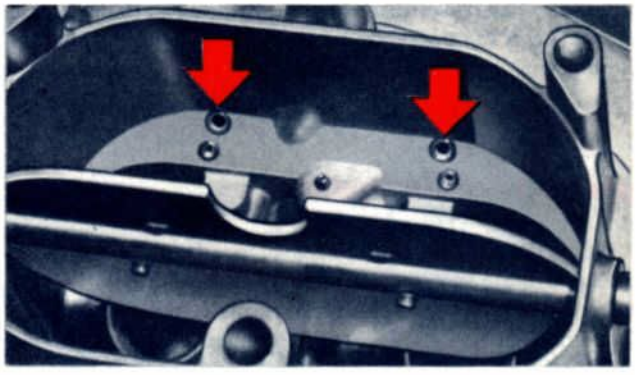


Fig. 11 High Speed Air Bleeds

Accelerating Pump System

Air, being very light, responds rapidly to changes in the throttle opening. Gasoline is heavier, and therefore not as responsive. When the throttles are opened suddenly, air flow increases rapidly, but fuel flow lags. So that the engine will respond instantly to opening the throttle, a piston-type accelerating pump system is employed, which furnishes a single spurt of fuel to each primary venturi when the throttles are opened.

The pump is completely enclosed in a chamber adjacent to the float chamber, to prevent the possibility of an external leak. When the throttles are closed (Figure 12), the accelerating pump link pulls the piston up, compressing the piston spring. A partial vacuum is created below the piston cup in the pumping chamber. Since fuel in the bowl is at atmospheric pressure, it pushes the intake check valve off its seat and causes fuel to flow from the bowl into the pumping chamber. The discharge valve is seated and prevents fuel flow into the venturi.

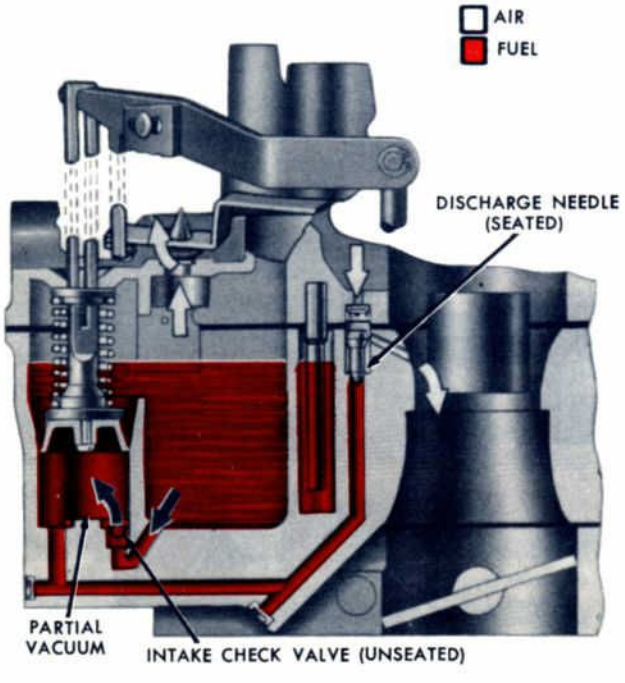


Fig. 12 Accelerating Pump System—Intake

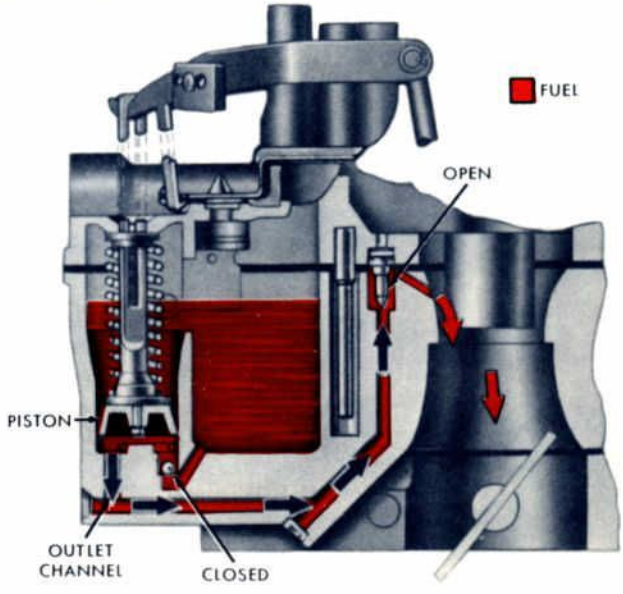
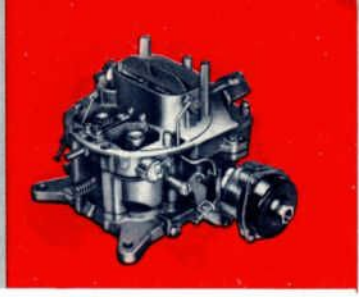


Fig. 13 Accelerating Pump System—Discharge



When the throttles are open (Figure 13), the accelerating pump link moves down in the piston arm slot, and the spring pushes the piston into the pumping chamber. Pressure builds up to force the intake check valve closed on its seat. Fuel is pumped through the discharge passages . . . the discharge valve is forced open by fuel pressure . . . and fuel is sprayed out the discharge nozzle.

A check ball and unique check disc at the upper end of the discharge passage prevents siphoning of fuel into the main metering system, where a vacuum is formed at high speeds.

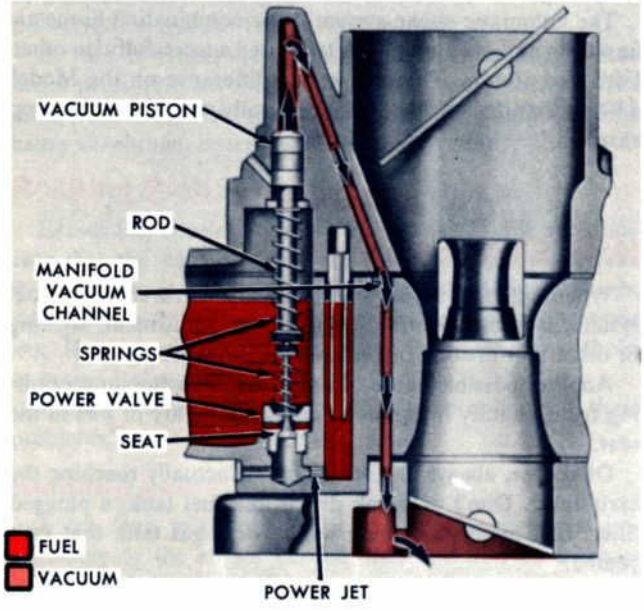


Fig. 14 Power Fuel Supply System

Power Fuel Supply System

When more power is required for high speed operation or acceleration than can be provided by the relative lean mixture used during cruising, extra fuel has to be added. The mixture is enriched by the power fuel supply system . . . consisting of a vacuum-controlled piston in the air horn body and a power valve (Figure 14). The vacuum piston rod is spring-loaded and tends to push the rod down. The stem of the power valve also is spring-loaded, tending to hold the power valve up or closed.

High manifold vacuum at the top of the piston during idle or cruising overcomes the piston rod spring force. This holds the piston and rod away from the power valve. The power valve spring then holds the valve closed.

When the engine is under load, such as accelerating, the vacuum drops. The vacuum piston rod is pushed down by its spring and pushes on the power valve. The comparatively light power valve spring is overcome and the valve opens (Figure 15). Opening the valve provides another passage from the bowl to the main wells . . . through the valve and power jets. The effect is the same as temporarily increasing the size of the main jets. More fuel is discharged through the main metering system to make the mixture richer.

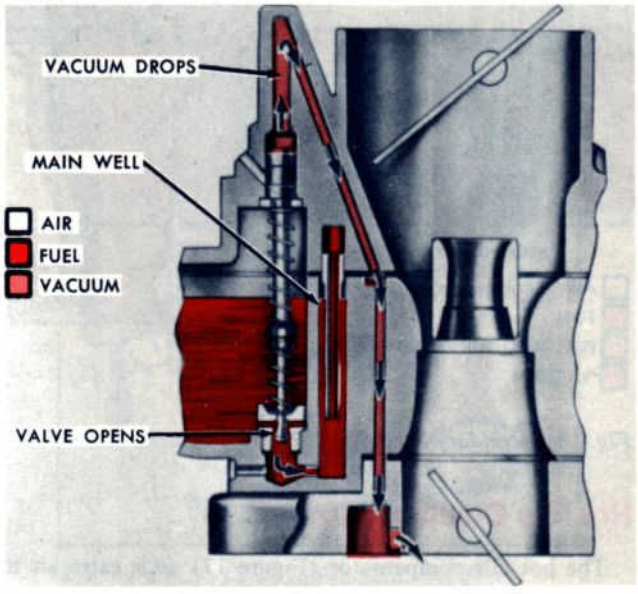


Fig. 15 Power Valve Action

Secondary Main Fuel Metering System

All the systems described so far take place in the primary venturis. When extra volumes of fuel-air mixture are desired for maximum power output, the secondary venturis are used. The secondary throttle plates are linked mechanically to the primary throttle plates, and begin to open when the primaries are three-quarters open. Above each secondary throttle plate is an offset valve plate (Figure 16). These plates are preloaded by a spiral torsion spring, which holds them closed when the secondary throttles are closed. With the air valve plates closed, a vacuum is formed beneath them when the secondary throttle plates begin to open. Since the fuel bowl is at air horn pressure, the pressure differential starts fuel flowing from the bowl and out of the enrichment discharge tube below the air valve plates.

A second stage of fuel supply occurs when the air valve plates are pulled open by manifold vacuum. Increased air flow then causes fuel to be discharged into the booster venturis. The amount that the air valves open, and therefore the amount of mixture delivered, is controlled by the difference in air pressure acting on the plates balanced against the spiral torsion spring. An integral hydraulic dashpot dampens sudden movement of the plates to prevent flutter and erratic engine operation.

Autolite Model 4300 4V Carburetor

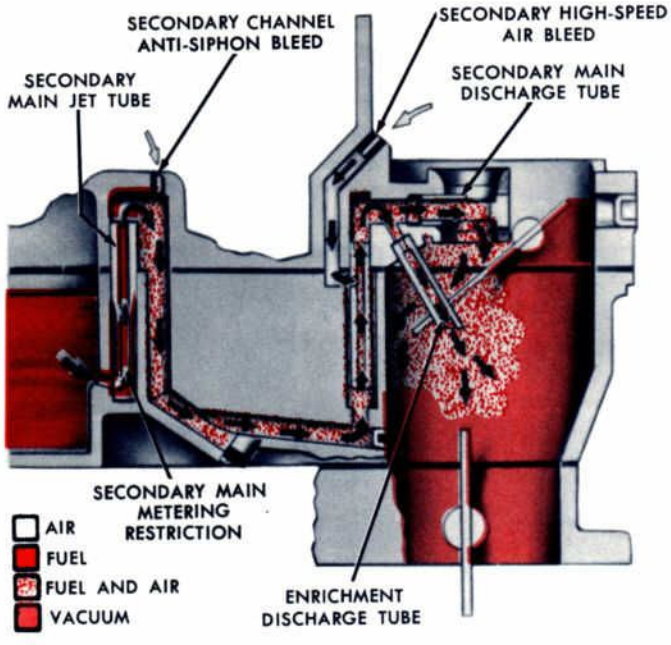


Fig. 16 Secondary Main Fuel Metering System

Hot Idle Compensator

The hot idle compensator (Figure 17) adds extra air to the idle mixture when the temperature is high at the carburetor inlet. The extra air improves idle stability and minimizes the enrichment effect of increased vaporization when the engine is hot.

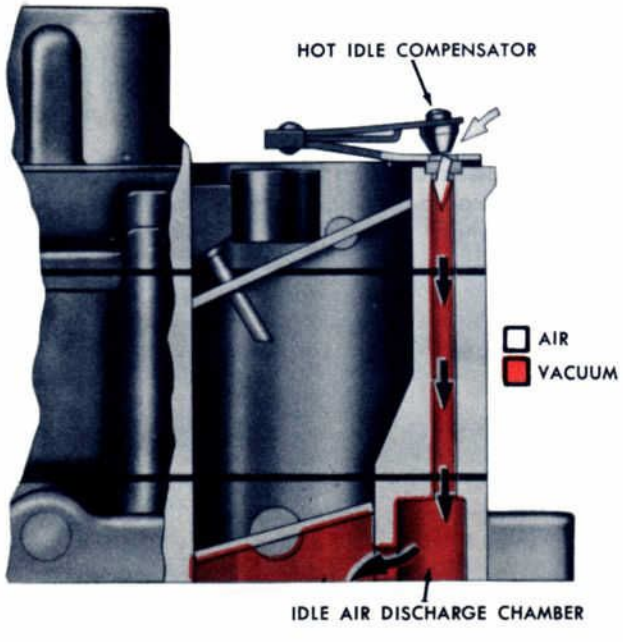


Fig. 17 Hot Idle Compensator

The compensator valve is located in the rear of the upper main body next to the secondary venturi. It is thermostatically operated. When the temperature is high enough to open the valve, air is admitted through a passage in the air horn and main bodies to the idle air discharge chamber in the throttle body. Here, the air is discharged below the secondary throttle plates and mixes in the manifold with the fuel and air coming from the primary venturis.

The secondary throttle plates, of course, are closed during idle operation.

Automatic Choke System

The automatic choke system is the combination bi-metallic spring and vacuum piston type used successfully on other Ford carburetors. The only major difference on the Model 4300 is that its housing is cast integrally with the carburetor base.

DIAGNOSIS

Hard, Slow or No Start

When difficulty in starting the engine is traced to the fuel system, it is often caused by incorrect adjustment, sticking or other malfunction of the automatic choke.

Another possible cause of hard starting is flooding resulting from a faulty inlet valve (needle and seat) or dirt in the seat.

Of course, always check that fuel is actually reaching the carburetor. Don't overlook dirt in the fuel tank, a plugged filter, fuel pump not doing its job or a gas tank that isn't vented.

Also, be certain the driver knows the correct procedure for cranking a cold and a hot engine. Referring the driver to the owner's manual has corrected many hard starting problems.

Poor Idle

On a poor idle complaint, check the adjustment of the idle fuel supply screws and the idle air bypass screw. Be certain that the hot idle compensator is functioning properly. If you have any trouble with the idle adjustment, remove the adjustment screws to look for a deformed tip on the needles.

Use carburetor solvent and compressed air to clean the idle air bleeds of any dirt and/or gum that has accumulated.

Another possible cause of poor idle is a high float level.

Poor Acceleration

Most accelerating problems, if actually in the carburetor, are in the accelerating pump system. Operate the pump by hand to see if it does deliver fuel properly. If it doesn't, look for a worn cup on the pump piston (high mileage); check valves not seating, and incorrect pump stroke adjustment. Replacing the cup, seating the valves and correcting the adjustment, respectively, will probably fix these troubles.

..Operation, Diagnosis, Adjustment

Dirt in any of the carburetor systems could cause this problem . . . also, a choke that is malfunctioning or insufficient heat below the carburetor. The affected carburetor, choke and manifold heat control valve parts should be cleaned with solvent and checked for free operation.

Other possibilities are incorrect float level which can be corrected by adjustment, and a clogged air cleaner, which should be cleaned or replaced.

Flooding

Flooding is most frequently caused by the inlet valves not sealing. If this condition is caused by dirt, remove the source of contamination and clean the carburetor as required. If the valves are worn or faulty, replace them.

In rare instances, a porous or cracked casting, or too much pressure from the fuel pump will cause flooding. The latter case would be traced to the wrong pump or a too heavy diaphragm operating spring in the pump.

Running Rich

Excess fuel consumption and a "rolling" engine may indicate that the carburetor is furnishing too rich a mixture. Possible causes of this condition are plugged air bleeds, inlet valve not sealing, restricted air cleaner, wrong main jets, leaking or stuck power valve, malfunctioning choke or excess fuel pump pressure.

We have already noted the corrective action for these problems.

Running Lean

A too lean mixture condition should be corrected immediately or the engine can be damaged. The basic cause is too little fuel being delivered or too much air.

Too little fuel can be traced to a plugged jet, dirt in the fuel supply system, the wrong jet, low fuel level in the bowl or low fuel pump pressure.

Also, look for air leaks in the intake system . . . the manifold gaskets, vacuum-operated distributor, power brake and carburetor mounting gasket. With the engine idling, check for leaks by squirting light oil on the suspected areas. The oil will quickly disappear if there is a leak.

Corrective action for these malfunctions is easily evident.

ADJUSTMENT

Adjustment of the various carburetor mechanisms should be made whenever diagnosis of operation points to the possibility of maladjustment . . . or when the carburetor is overhauled.

The order of adjustment is as follows:

- Float Valve
- Auxiliary Float Valve
- Choke Pulldown
- Fast Idle Cam
- Choke Unloader (Dechoke)
- Air Valve Spring Tension
- Accelerating Pump Stroke
- Vent Valve Clearance
- Choke
- Thermostatic Spring
- Idle Fuel
- Idle Speed
- Fast Idle Speed

Most adjustments can be made on the car; the exception is the float adjustment which requires removing the air horn.

Float Adjustment

There are two float adjustments, one for the main or primary valve and one for the auxiliary valve. The float setting, which controls the fuel level in the bowl, is critical because the fuel level affects calibration. The auxiliary fuel inlet valve is adjusted after the primary valve and float setting. You will need a float gauge and bending tool (Figure 18) to make the adjustments. You can fabricate these tools from material available locally.

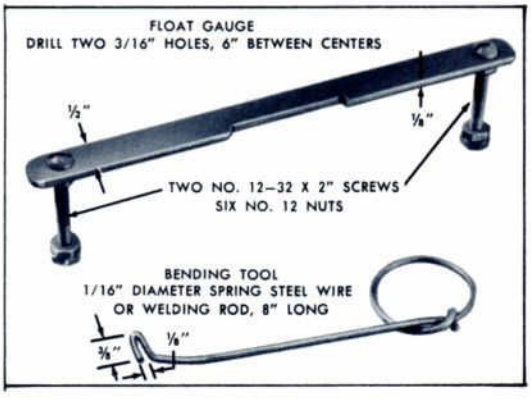


Fig. 18 Float Gauge and Bending Tool

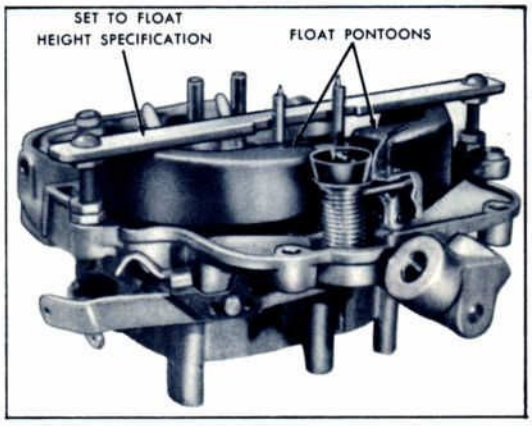


Fig. 19 Float Setting Adjustment

Float Setting

To make the primary float setting adjustment:

1. Adjust both nuts on the gauge (Figure 18) to the float height specification which is $\frac{25}{32}$ inch.
2. Insert the ends of the gauge screws in the outboard holes of the air horn (Figure 19).
3. Align the pontoons, if required, by twisting them slightly.
4. Bend the primary tab in the float lever as required, so that both pontoons just touch the gauge.

Autolite Model 4300 4V Carburetor.

Float Setting (continued)

To raise the float, insert the open end of the bending tool (Figure 20) between the needle and float hinge. Raise the float lever off the needle and bend the tab downward.

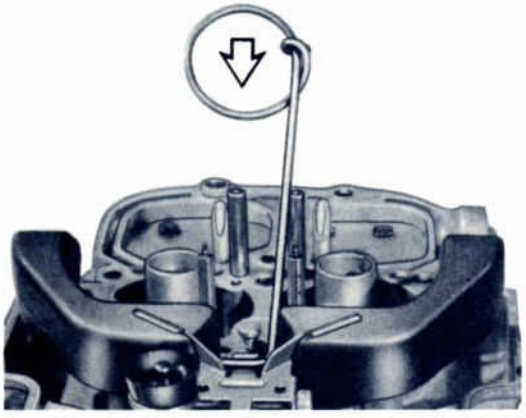


Fig. 20 Raising Float

To lower the float, insert the open end of the tool (Figure 21), between the needle and float tab. Support the lever and bend the tab upward.

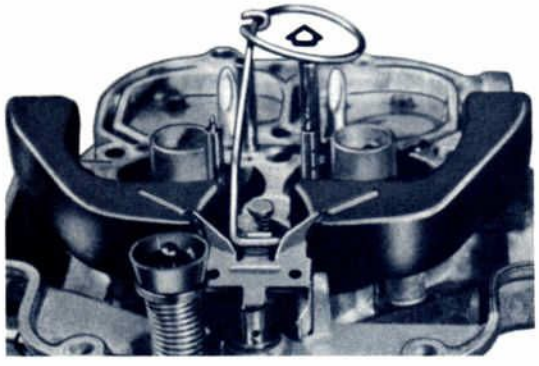


Fig. 21 Lowering Float

Auxiliary Valve Setting

The auxliary valve setting is adjusted with the same gauge you use for the float setting (Figure 22). The gauge must be set at the float height specification.

After setting the primary float tab and float, leave the gauge in position; turn the air horn right-side up so that the floats rest on the gauge.

Measure the clearance between the tab on the float lever and the valve pin. If the clearance is not to specifications . . .

. . . use the bending tool to bend the tab up or down as required.

Choke Plate Pulldown

Your choke plate pulldown specification tells you how far the choke plate should be pulled open by the vacuum piston when the engine starts. You make it by blocking the vacuum piston at its limit of travel and measuring the

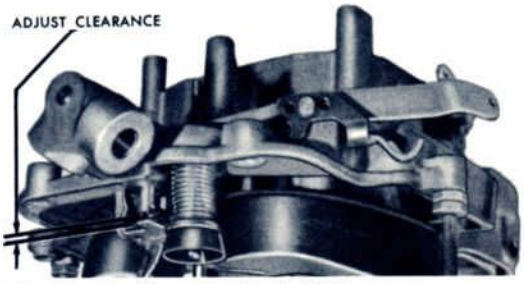


Fig. 22 Auxiliary Fuel Inlet Valve Setting

clearance between the choke plate and air horn wall (Figure 23).

This is the procedure:

Remove the thermostatic choke cover.

Bend a 0.036-inch gauge wire at a 90-degree angle, about ⅛ inch from the end.

Insert the bent edge of the gauge between the vacuum piston slot and the upper edge of the right-hand slot in the choke housing.

Rotate the automatic choke lever counterclockwise until the gauge is snug in the piston slot. Hold a slight pressure on the choke lever to keep the gauge in place.

Check the clearance between the lower edge of the choke plate and the air horn wall with a gauge or drill rod of the specified diameter.

If an adjustment is needed, bend the adjustment arm on the choke shaft lever at the narrow portion of the arm.

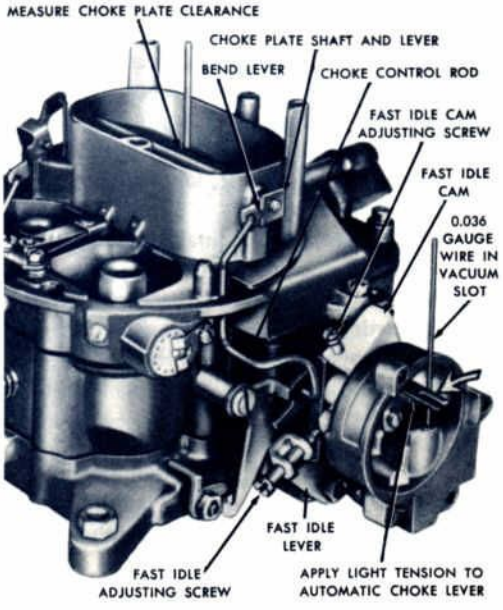
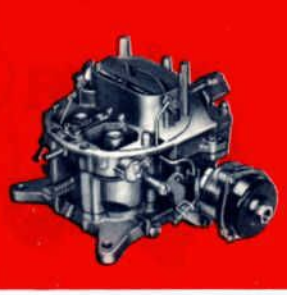


Fig. 23 Choke Plate Pulldown Adjustment

Fast Idle Cam Choke Clearance

Remove the gauge pin from the choke piston and install the choke cover loosely so that it can rotate. Be certain the end of the thermostatic spring is engaged in the choke lever slot.



Turn the cover to a 90-degree rich position so that the linkage will be at full choke.
Hold the fast idle speed adjustment screw on the first kickdown step of the fast idle cam.
Check the clearance (Figure 24) between the upper edge of the choke plate and the air horn wall. If the clearance is incorrect:
Turn the fast idle cam adjustment screw to adjust the clearance to specifications. See chart page 2.
Set the choke cover to specifications and tighten the cover retaining screws.

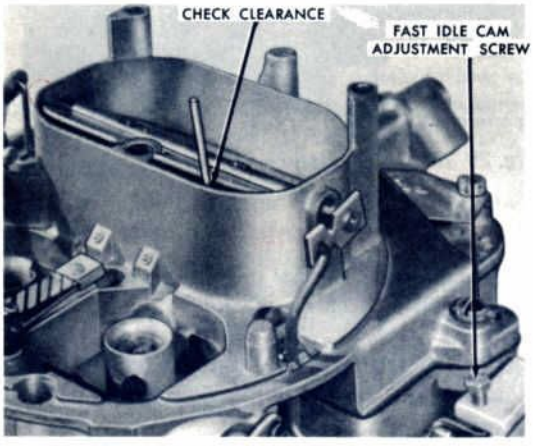


Fig. 24 Fast Idle Cam Choke Clearance

Unloader Clearance (Dechoke)

The choke unloader specification is for the correct amount of choke plate opening when the accelerator is "floor-boarded." Check it as follows:

Block the primary throttles in the wide-open position.
Close the choke plate until the projection on the fast idle lever is against the fast idle cam.
Check the clearance between the upper edge of the choke plate and the air horn wall (Figure 25). It should measure 1/16 inch.
If necessary, bend the projection on the fast idle lever to obtain the specified clearance.

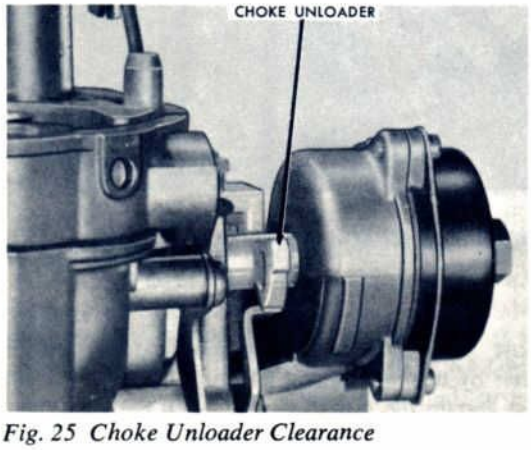


Fig. 25 Choke Unloader Clearance

Air Valve Spring Adjustment

An adjustment is provided in the air valve spring housing to apply the correct closing load to the air valve plates. To make the adjustment:

Loosen the housing retainer (Figure 26) and let the housing turn so there is no load on it.
Hold the air valve plates closed, and turn the housing 140-degrees (seven knobs) counterclockwise.
Hold the adjustment and tighten the housing retainer.

Accelerating Pump Stroke

The accelerating pump is designed to operate with the pump link pivot pin (Figure 27) in the center of the No. 2 hole. The pin may be installed in the No. 1 (left) hole to decrease the amount of fuel discharged, or in the right hole to increase fuel quantity. Moving the pivot pin changes the stroke of the pump piston.

If it becomes necessary to make this deviation from specifications (see chart page 2) use the following procedure:

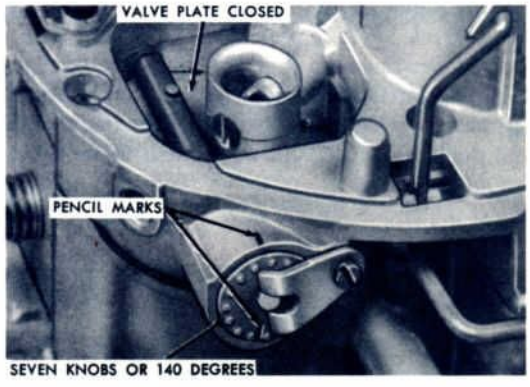


Fig. 26 Air Valve Spring Adjustment

Remove the retainer that holds the accelerating pump rod to the link, and disconnect the rod.
Remove the pivot pin retainer and change the pin location as required. Be certain all three holes in the bowl vent lever, body and pump link remain aligned.
Reinstall the pivot pin retainer, and the pump rod and retainer.
Adjust the external fuel bowl vent valve clearance (procedure follows).

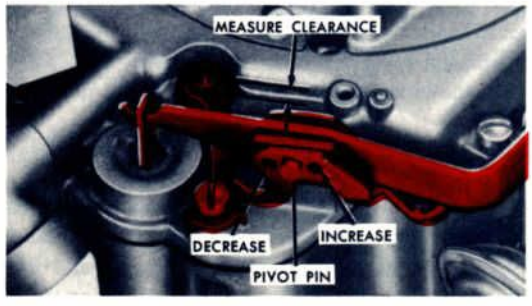


Fig. 27 Accelerating Pump Stroke Adjustment and External Vent Valve Clearance

Autolite Model 4300 4V Carburetor ...Operation, Diagnosis, Adjustment

Fuel Bowl Vent Valve Adjustment

The fuel bowl vent valve clearance at closed throttle must be correct for proper calibration at idle and to assure that the valve will close as the throttles open. Should the valve stay open at higher engine speeds, a richer mixture might result. The procedure is:

1. Hold the primary throttles fully closed. If the engine is cold, be certain to rotate the fast idle cam away from the fast idle speed adjustment screw.
2. Measure the clearance between the vent valve and its seat (Figure 27). It should measure 1/16 inch.
3. Bend the end of the vent valve lever as necessary to adjust the clearance . . . down to decrease clearance, up to increase clearance.

Choke Setting

The final choke adjustment is the setting of the thermostatic spring. This adjustment and the choke plate pulldown adjustment are most critical for reliable starting and prevention of stalling during warm-up. Make this adjustment only after the pulldown, fast idle cam, and unloader adjustments are correct.

It may be desirable to vary the choke setting adjustment slightly from specifications to suit local conditions. However, never deviate more than two stops in either direction. And don't try to use this adjustment to short-cut the pulldown adjustments.

To adjust the choke setting, refer to Figure 28.

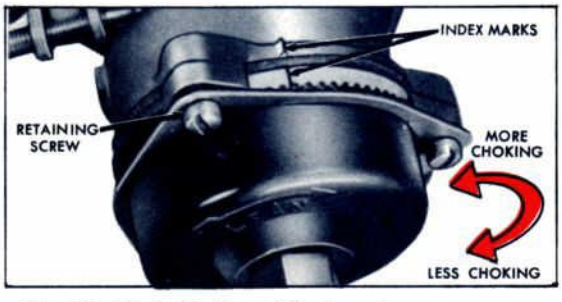


Fig. 28 Choke Setting Adjustment

1. If the carburetor is installed on the engine, hold the fitting on the cover with a wrench and loosen the choke heat tube nut.
2. Loosen the choke cover retaining screws.
3. Align the index mark on the housing with the index mark on the plastic cover.
4. Tighten the cover screws and the heat tube nut.

IDLE ADJUSTMENTS

Proper idle adjustment procedures are important to ensure a smooth idle and correct idle speed. You should make preliminary adjustments of the idle fuel screws and idle air bypass screw (on or off the car) before the engine is started. Make the final settings then with the engine operating and fully warmed up.

Preliminary Idle Adjustments

1. Turn the idle fuel adjustment screws (Figure 29) in (clockwise) until seated; then, turn out 1½ turns.
2. Turn the idle air bypass screw (Figure 30) in until it seats lightly; then, back it out 3½ turns.

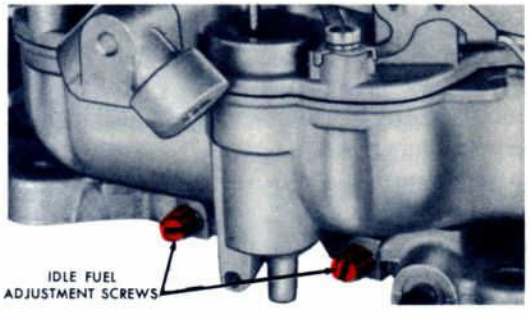


Fig. 29 Idle Fuel Mixture Adjustment

Final Idle Adjustments

1. With the engine at normal operating temperature, install a tachometer and check the idle speed against specifications.
2. Turn the idle air bypass adjustment screw (Figure 30) out to increase rpm or in to decrease rpm to specifications.
3. Turn one idle fuel adjustment screw in until the rpm starts to drop. This is the idle lean point. Turn the screw out ¼ turn from the idle lean.
4. Repeat step 3 for the other fuel adjustment screw.
5. Touch up the idle fuel adjustment screws as required, for smoothest idle.
6. Recheck the idle rpm, and readjust the idle air bypass screw, if necessary, to maintain the specified idle speed.

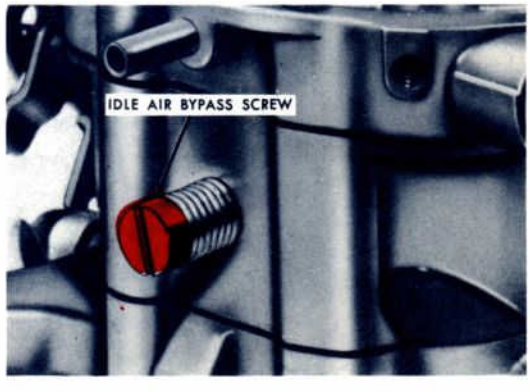


Fig. 30 Idle RPM Adjustment

Fast Idle RPM

Adjust the fast idle rpm to specifications with a tachometer by turning the fast idle adjustment screw (Figure 23). Be certain the fast idle screw is on the kickdown step of the fast idle cam.

TECHNICAL SERVICE BRIEFS

IGNITION SYSTEM PROBLEM DIAGNOSIS

An ignition system problem can be quickly isolated to either the primary (low voltage) circuit or secondary (high voltage) circuit by observing the spark output of the coil. To do this, remove the coil high voltage wire from the distributor cap and hold the end approximately ¼ inch from a ground position while cranking the engine. The condition of the spark at this point in the ignition system separates a primary from a secondary ignition system problem. Based on a "bright hot spark" or "weak or no spark" condition, the following diagnosis procedure will pinpoint the cause of the problem.

Bright Hot Spark

A bright hot spark indicates the primary (low voltage) circuit and ignition coil are functioning satisfactorily. Perform the following checks to locate a secondary (high voltage) circuit malfunction.

1. *Distributor Cap*—Check for electrical leakage (tracking), electrode erosion or a broken carbon button.
2. *Rotor*—Check for visual defects or damage.
3. *Spark Plug High Tension Wires*—Check for continuity or high resistance with an ohmmeter (10,000 ohms per foot maximum).
4. *Spark Plugs*—Check for excessive gap, physical damage or various fouling conditions.

Weak or No Spark

A weak or no spark condition indicates a primary (low voltage) circuit problem which can be isolated by the following checks.

1. Ignition Points

Replace the ignition points if:

a) Metal transfer exceeds the specified point gap setting; for example, if the amount of metal transfer exceeds 0.017 inch on an eight-cylinder engine.
b) Contact parts such as the rubbing block, tungsten contact discs, moveable arm or stationary bracket are physically damaged or worn.
c) The moveable arm is sticking or binding at the pivot post.
d) The points are electrically shorted at the pivot post.
e) The voltage drop across the point contacts exceeds 0.25 volts or an approved commercial tester indicates "high-resistance."

NOTE: If ignition points are prematurely burnt or eroded, also check primary resistance wire circuit per step (f).

f) Check the voltage *drop* between the accessory terminal on the ignition switch and the primary (positive) coil terminal with the ignition turned on. Replace the wire if the voltage reading is below 4.5 or above 6.6 volts. If the voltage *drop* reading is below specifications, coil output should be checked as outlined in step 4.

2. Condenser

Replace the condenser only if:

a) It is shorted when checked with an ohmmeter.
b) It has over 1 ohm series resistance at room temperature.
c) It exhibits physical damage.
d) It is found defective on an approved commercial tester.

3. Coil To Distributor High Voltage Wire

Resistance as checked by an ohmmeter should not exceed 1,000 ohms per inch.

4. Coil

Check coil output on an oscilloscope or approved coil tester.

5. Primary Wiring Circuit

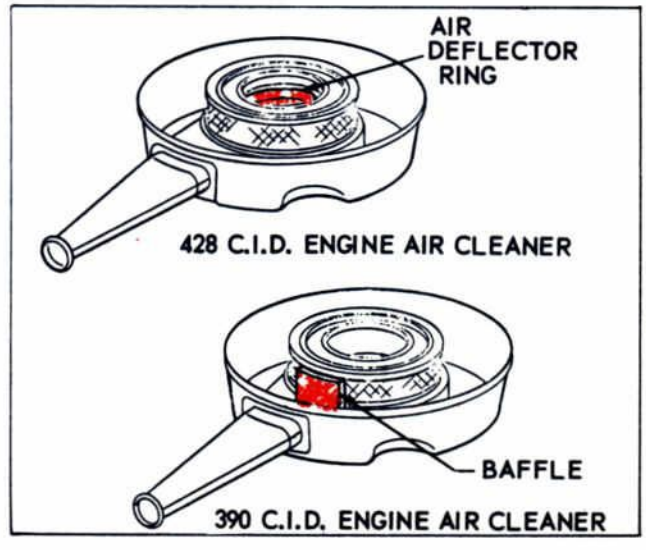
Check the primary (low voltage) circuit between the battery and coil for excessive resistance or an open or intermittent condition to insure complete correction.

If this procedure does not reveal a defective component, check related systems for defects which could have similar problem symptoms.

428 CID ENGINE SURGE OR INADEQUATE HIGH SPEED PERFORMANCE

Engine surge or inadequate high speed performance with 428 CID engines may be caused by improper air cleaner application. The 390-2V and 428 CID engine air cleaners have identical external dimensions and appearance. Internally, however, the 390-2V air cleaner has an additional baffle between the air inlet tube and air filter element which will restrict the air requirements of the 428 CID engine.

The 428 air cleaner can be identified externally by looking into the air inlet tube. If the air filter element can be viewed through the air inlet tube, it is the proper air cleaner. If, however, only the baffle can be seen, it is incorrect and the proper 428 air cleaner (Ford Part Number C6AZ-9600-G) should be installed, and the vehicle evaluated for problem correction.



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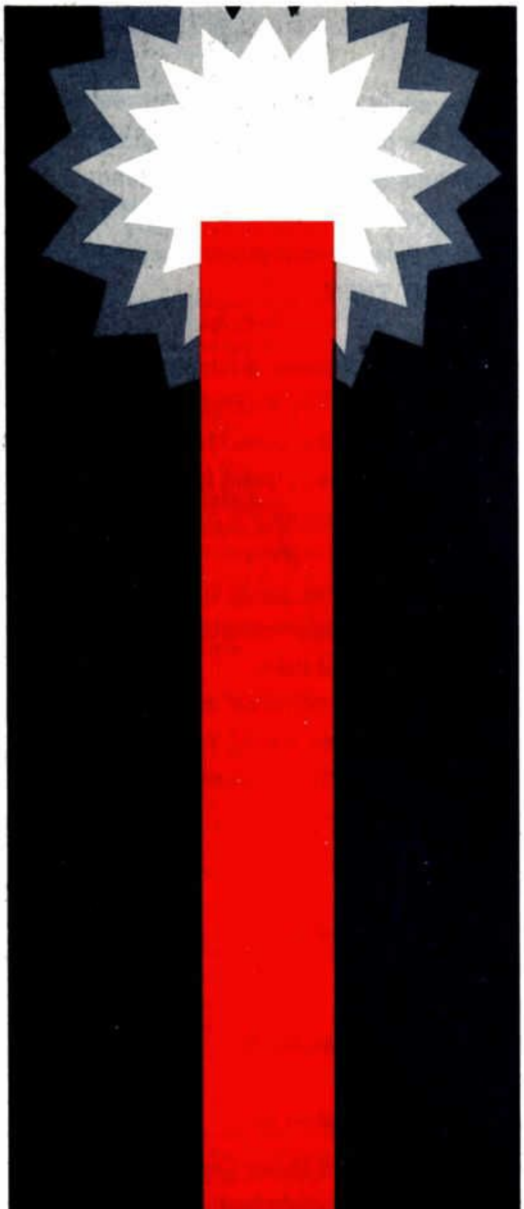

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