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CARTER 4-BARREL CARBURETOR SERVICE INFORMATION

GENERAL DESCRIPTION

CARTER AFB 4-BARREL CARBURETOR

The Carter AFB 4-Barrel carburetor is now being used in mixed production with the Rochester 4 GC 4-Jet carburetor.

The Carter 4-Barrel carburetor is composed of two major assemblies, air horn assembly and a combined throttle body and bowl called the body assembly. The air horn and body are made of cast aluminum.

The Carter AFB carburetor is basically two dual carburetors in one assembly. The half of the carburetor containing the step up rods, pump assembly and idle system is called the primary side of the carburetor. The other half is called the secondary side.

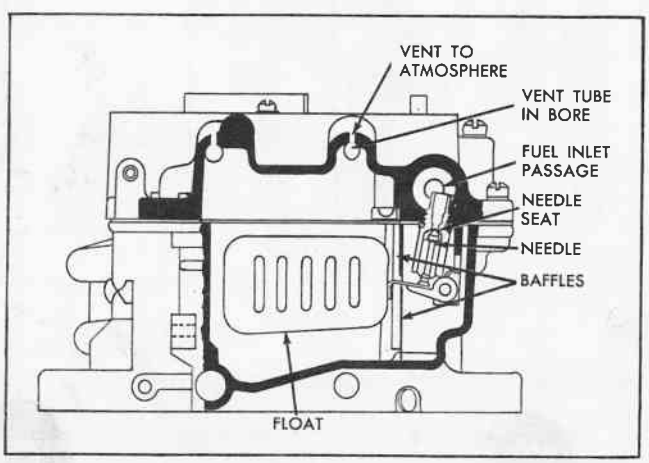

Fig. 1 Float Circuit

The carburetor contains the conventional carburetor circuits. They are:

Float Circuits

Low Speed Circuits

High Speed Circuits

Pump Circuits

Choke Circuits

FLOAT CIRCUIT (Fig. 1)

The purpose of the float circuit is to maintain the correct fuel level in the carburetor bowl at all times. The Carter AFB carburetor has two separate float circuits. Each float operates in its own float bowl and each bowl supplies fuel to a primary low speed circuit and to a primary and secondary high speed circuit. The two circuits operate identically.

When the fuel level in the bowl drops the float also drops allowing the needle to fall away from its seat. Fuel at the fuel inlet under fuel pump pressure will then enter through the strainer screen past the needle and seat and into the float bowl. As the fuel level rises in the bowl the needle valve is seated cutting off the flow of fuel.

The intake needle seats are installed at an angle to give positive seating action of the intake needles. Intake needles and seats are carefully matched in manufacture and tested to ensure against fuel leakage. They should, therefore, always, be used in pairs and not intermixed.

The bowl areas are vented to the inside of the air horn, to atmosphere and to each other to ensure equal pressure on the surface of the fuel at all times and to allow the escape of fuel vapors. Baffles are used in the bowl area to minimize fuel turbulence.

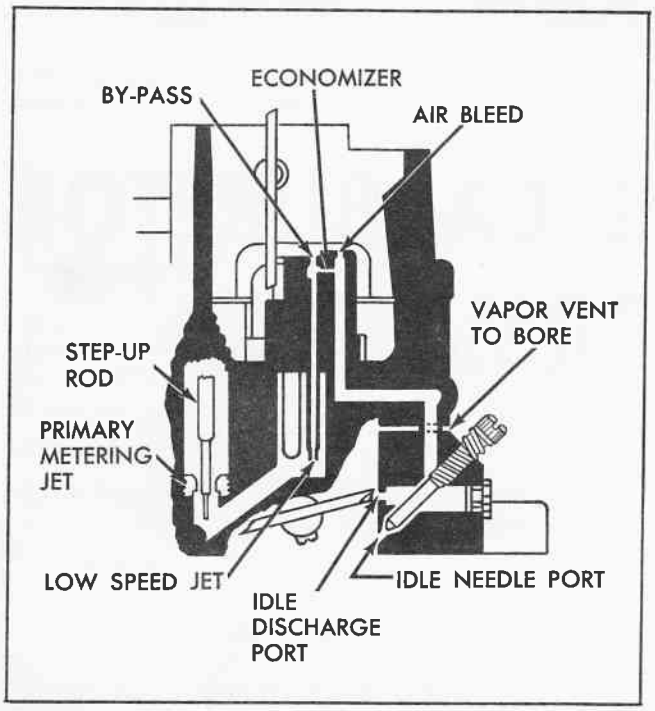

Fig. 2 Low Speed Circuit

LOW SPEED CIRCUIT (Fig. 2)

Fuel for idle and early part throttle operation is metered through the low speed circuits on the primary side of the carburetor. With the throttle valves closed manifold vacuum exists at the idle needle port and idle discharge port. Atmospheric pressure will then force fuel through the primary metering jet and up through the low speed jet. The fuel picks up air at the by-pass and is metered and broken up in the economizer passage. The fuel mixture then passes by another air bleed, down the idle passage and is discharged at the idle discharge port and the idle needle port.

The idle ports are slot-shaped. As the throttle valves are opened, more of the idle ports are uncovered allowing a greater quantity of fuel mixture to enter the carburetor bores. The secondary throttle valves remain closed at idle.

To aid in hot starting, vapor vents are provided in the throttle bores.

HIGH SPEED CIRCUIT PRIMARY SIDE (Fig. 3)

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

As the throttle valves are opened air flow through the carburetor increases to the point that fuel is picked up at the discharge nozzles located in the main venturi. The pressure differential caused by the rapid flow of air through the venturi forces fuel through the primary metering jet up through the main vent tube. After picking up air at the air bleed the mixture is forced out through the main discharge nozzle. The air bleed in the high speed circuit also serves as an anti-percolator passage.

The amount of fuel delivered through the primary high speed circuit is dependent upon air flow or throttle valve opening and by the position of the step up rods in the primary main metering jets. The step-up rods are controlled entirely by manifold vacuum. When manifold vacuum is high, the step-up rod piston and step-up rod are held downward restricting the flow of fuel through the primary main metering jet. Under any operating condition that reduces manifold vacuum such as acceleration or hill climbing the step-up rod piston spring raises the step-up rod, positioning the smaller diameter or power step in the jet. This allows additional fuel to be metered through the jet. The step-up rods are not adjustable.

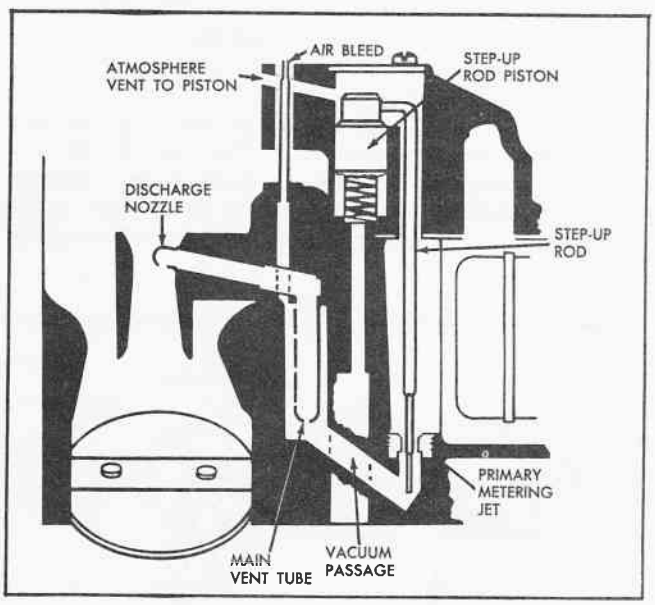

Fig. 3 High Speed Circuit - Primary Side

HIGH SPEED CIRCUIT—SECONDARY SIDE (Fig. 4)

The throttle valves in the secondary side remain closed until the primary throttle valves open a predetermined amount (approximately 50° of throttle

opening). They arrive at the wide open position at the same time as the primary throttle valves.

Mounted above the secondary throttle valves are the auxiliary throttle valves. These valves are opened by air flow and closed by counterweights. When the secondary throttle valves open, only the primary high speed circuit will function until there is sufficient air velocity to open the auxiliary throttle valves. When the auxiliary valves open, fuel will be supplied through the secondary high speed circuit.

Fuel for the secondary side is metered through the secondary main metering jets. No step-up rods are used.

To supplement the starting of the secondary high speed circuit an initial discharge system is used. Initial discharge ports are located next to the venturi struts. When the auxiliary valves start to open, a low pressure area results at these ports and atmospheric pressure forces fuel up the pick-up tube. Air is picked up at the air bleed and the mixture enters the air stream at the initial discharge ports. As the auxiliary valves continue to open and the secondary nozzles begin to function, pressure increases at the discharge ports and their operation ceases.

PUMP CIRCUIT (Fig. 5)

The accelerating pump circuit located in the primary side provides for a measured amount of fuel to be discharged into the carburetor throat during acceleration from low car speeds. A rapid opening of the throttle valves, as is the case when accelerating from low speeds, causes an immediate increase in air velocity. Since fuel is heavier than air it requires a short period of time for it to "catch up" with the air flow. To avoid a leanness during this momentary lag, the accelerator pump furnishes a quantity of liquid fuel, sprayed into the air stream to mix with incoming air and maintain the proper fuel-air mixture. The pump is operated by the combined action of two springs which are calibrated to move the plunger in such a manner that a sustained charge of fuel is delivered for smooth acceleration.

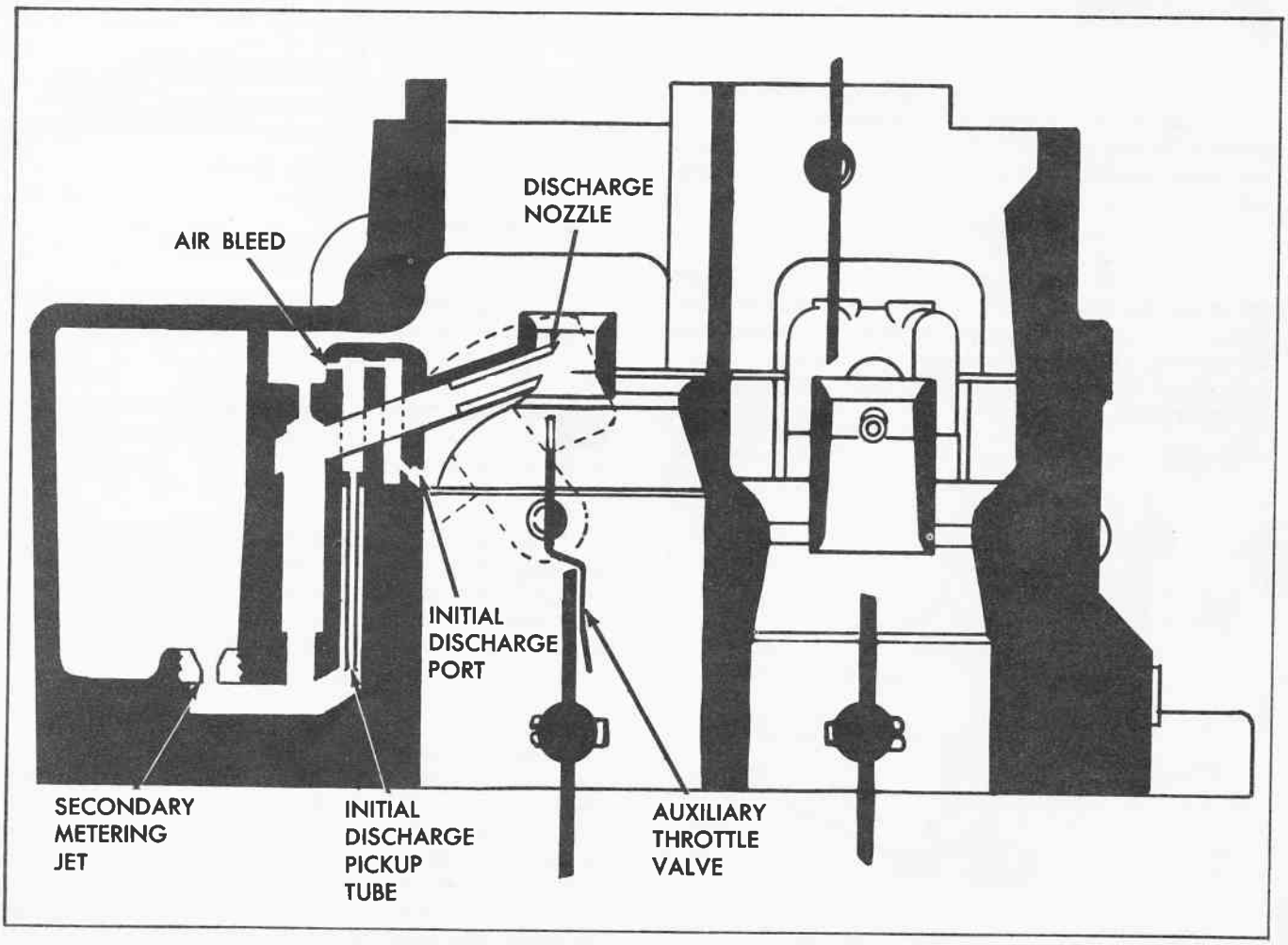

Fig. 4 High Speed Circuit - Secondary Side

The pump is attached by linkage to the accelerator so that when the throttle valves are closed the pump plunger moves upward in its cylinder creating a low pressure area (partial vacuum) in the cylinder below the plunger. Atmospheric pressure acting on the fuel in the bowl forces fuel into this cylinder through the intake ball check. The discharge needle is seated at this time to prevent air being drawn into the cylinder.

When the throttle is opened, the friction of the plunger in the cylinder and the tension of the lower plunger spring resists the downward movement of the pump plunger causing the plunger shaft to telescope. This compresses the upper spring. The upper spring then overcomes the resistance and pushes the plunger down. However, the speed of the plunger is retarded by the lower spring so that a sustained charge of fuel is released into the system. The movement of the plunger exerts a pressure in the cylinder which seats the intake ball check preventing fuel from being forced back into the bowl. The same pressure also forces fuel up the discharge passage, unseating the pump discharge needle, and on through the pump jets in the cluster where it is sprayed into the carburetor throat.

At higher speeds, pump discharge is no longer necessary to insure smooth acceleration. When the throttle valves are opened a predetermined amount, the pump plunger bottoms in the cylinder eliminating pump discharge.

During high speed operation, a vacuum exists at the pump discharge ports. To prevent atmospheric pressure from forcing fuel to these ports and into the system, the pump jets are vented. This allows air instead of fuel to be forced through the pump discharge ports.

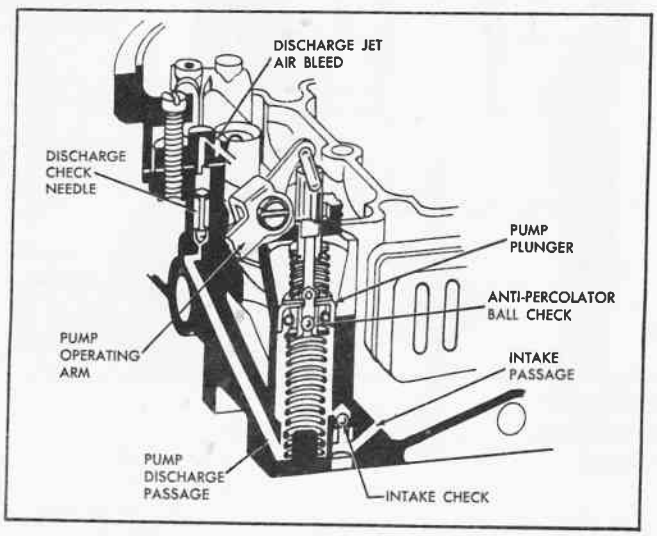

Fig. 5 Pump Circuit

An "anti-percolator" check valve, contained inside the plunger, provides relief for any vapors which might form during hot idle or when a hot engine is not operating. The ball check is designed so that it can move up and down in its passage. Throughout the above periods it is unseated by gravity and vapors in the pump well rise and by-pass the ball check through small holes in the plunger head.

The "anti-perc" ball check also acts as an extra inlet during the upstroke of the plunger, but is seated by fuel when the plunger moves down.

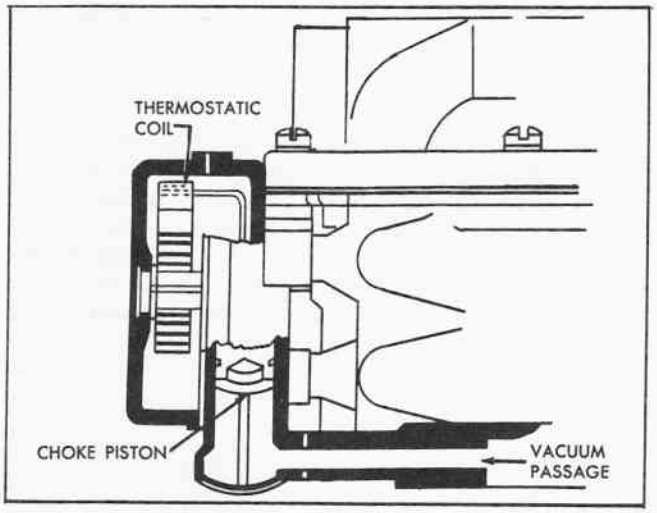

Fig. 6 Choke Circuit

CHOKE CIRCUIT (Fig. 6)

The purpose of the choke system is to provide a very rich mixture for cold engine operation.

The choke system subjects all fuel outlets in the bore of the carburetor to manifold vacuum while restricting the intake of air.

The choke system includes a thermostatic coil, housing, choke piston, choke valve, and fast idle cam and linkage. It is controlled by a combination of intake manifold vacuum, air velocity against the offset choke valve, atmospheric temperature and hot air from the intake manifold.

When the engine is cold, tension of the thermostatic coil holds the choke valve closed. Starting the engine causes air velocity to strike the offset choke valve. This tends to open it along with the action of intake manifold vacuum on the choke piston. Thus, after a slight opening of the choke valve, the tension of the thermostatic coil spring balances the force of air on the valve and the pull of vacuum at the piston.

At the cold idle position, slots located in the sides of the choke piston cylinder are uncovered, exposing them to intake manifold vacuum. Air, heated in a tube running through the exhaust cross-over passage in the intake manifold, then fills this low pressure area in the choke housing. The flow of warm air heats the thermostatic coil and causes it to lose its tension until full choke valve opening is accomplished. A secondary baffle plate is located in the choke housing to distribute the warm air evenly over the thermostatic coil, thereby insuring gradual relaxation of the coil. The baffle revolves with the choke valve and prevents the warm air from striking the thermostatic coil until the choke valve opens a predetermined amount. This delays choke opening.

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 a richer mixture.

To combat engine stalling during warm-up on cool, humid days, caused by "carburetor icing", heated air from the choke housing is circulated through a passage in the base of the carburetor.

During the warm-up period, it is necessary to provide a fast idle to prevent engine stalling. This is accomplished by a fast idle cam connected to the choke shaft. The fast idle adjusting screw on the throttle lever contacts the fast idle cam and prevents the throttle valves from returning to a normal warm engine idle position until the choke is open.

If, during the starting period, the engine becomes flooded the choke valve can be partially opened manually to allow increased air flow through the carburetor. This is accomplished by depressing the accelerator pedal forcibly to the floor and engaging the starter. The unloader projection on the throttle lever contacts the unloader lug on the fast idle cam and in turn partially opens the choke valve.

ADJUSTMENTS ON CAR

All Carter adjustments can be performed on the car. With the exception of the idle speed and mixture adjustment on the car fast idle adjustments and the unloader adjustment, all adjustments are included in the "Overhaul and Adjustments" procedure. Following are the fast idle, the idle speed and mixture adjustments, and the unloader adjustment.

FAST IDLE ADJUSTMENT

1. Start engine and run until engine reaches normal temperature.
2. Move fast idle cam so that highest step is under end of fast idle screw.
3. Observing tachometer, adjust fast idle screw to give an engine speed of 1900 RPM.

IDLE SPEED AND MIXTURE ADJUSTMENT

With the engine at operating temperature adjust idle speed to the following specifications.

Synchro-Mesh	450 - 470 R.P.M.
All Hydra Matic Except Air Conditioning	430 - 450 R.P.M. in Drive Range
All Air Conditioning	500 - 520 R.P.M. in Drive Range Air Conditioning Off

The idle mixture adjustment should be adjusted to give a smooth idle at the specified idle speed. Missing is a sign of too lean an idle mixture, while "rolling" or "loping" indicates too rich a mixture. Turning in the idle mixture adjusting screw leans out the idle mixture. One and one-half turns out from the lightly seated position may be used as a preliminary setting of the idle mixture adjusting screw before making the final setting.

UNLOADER ADJUSTMENT

1. Remove carburetor air cleaner assembly.
2. Depress accelerator pedal forcibly to floor. (This should be done by person sitting in driver's seat of car to stimulate actual driving conditions.) Check to see that accelerator pedal is not hitting "hump" over transmission. Move upper end of pedal to left if necessary by enlarging left hand hole in accelerator pedal bracket, and rotating bracket counterclockwise.
3. With accelerator pedal depressed as in step 2, bend tang on throttle lever to give a clearance of 1/8" $\pm$ 1/64" (gauge J-818-5) between top of choke valve and inside of air horn.
4. Replace air cleaner assembly.

The above procedure will eliminate variance in linkage, floor mat, pedal location, etc. and should ensure correct unloader action.

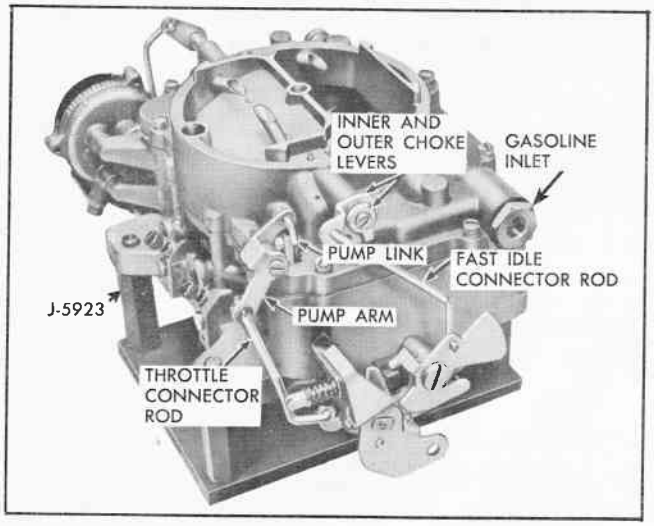

Fig. 7 Carter AFB Carburetor

OVERHAUL AND ADJUSTMENTS CARTER MODEL AFB CARBURETOR

DISASSEMBLY

Disassembly of Air Horn

1. Place carburetor on stand J-5923 and remove gasoline inlet strainer nut, gasket and inlet screen (Fig. 7).

2. Remove throttle connector rod and anti-rattle spring (Fig. 7).

3. Remove fast idle connector rod at upper end (Fig. 7).

4. Remove choke connector rod (Fig. 8).

5. Remove two step-up piston cover plate attaching screws and cover plates (Fig. 8).

6. Remove two step-up rod and step-up pistons. If desired step-up rod may be separated from piston by unhooking step-up rod retaining spring from end of rod (Fig. 9). Remove two step-up rod piston springs.

7. Remove choke shaft lever retainer screw, inner and outer choke shaft levers and washers from end of choke shaft (Fig. 7).

8. Remove two choke valve attaching screws and choke valve.

9. Remove 10 air horn attaching screws and lift off air horn assembly.

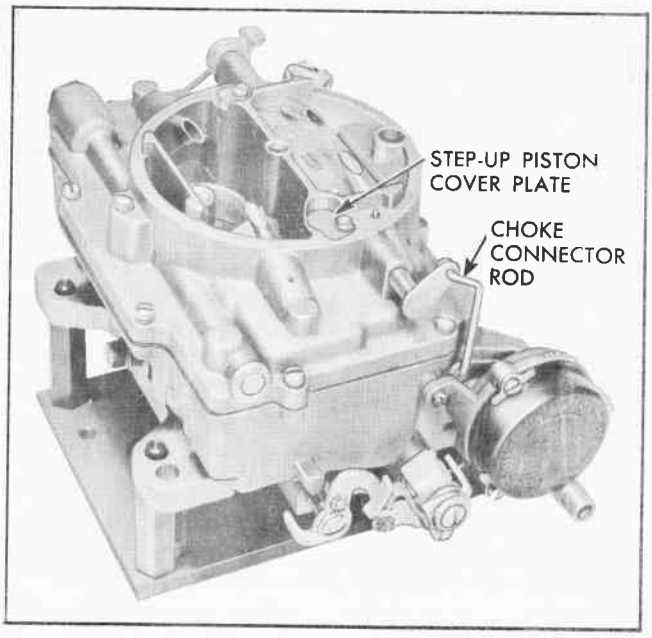

Fig. 8 Carter AFB Carburetor

10. Slide choke shaft from air horn.

11. Remove pump arm and link and pump plunger assembly (Fig. 7).

12. Remove float hinge pin, float and float needle assembly on inlet side of carburetor (Fig. 10).

13. Remove float needle seat and gasket using wide blade screw driver. NOTE: Keep individual float parts grouped so that same needle and seat are used together.

14. Remove remaining float hinge pin, float, float needle, float needle seat and gasket.

15. Remove air horn gasket.

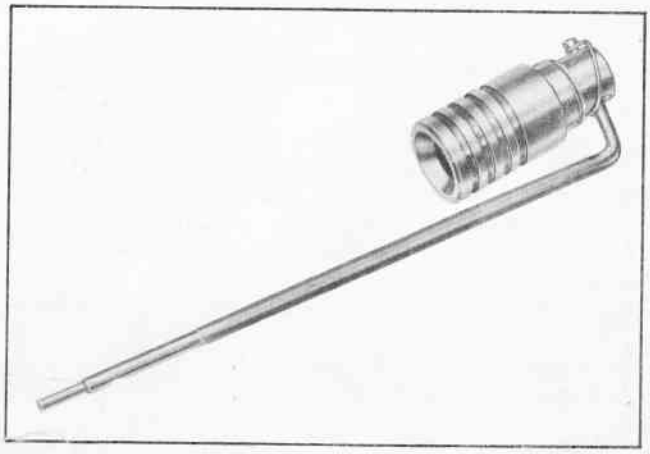

Fig. 9 Step-Up Rod and Piston Assembly

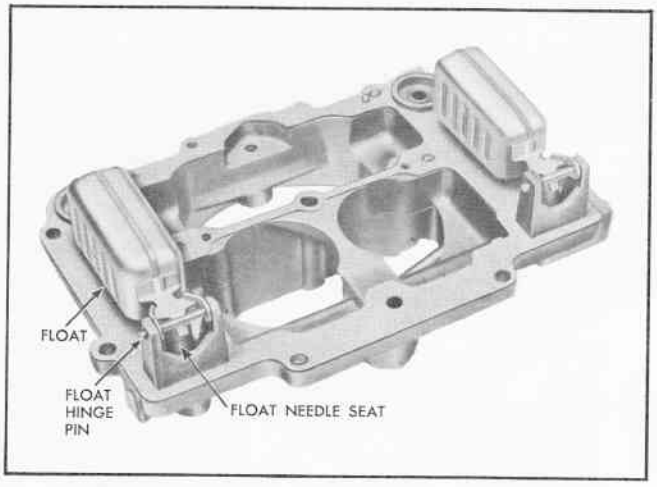

Fig. 10 Air Horn Assembly

DISASSEMBLY OF CARBURETOR BODY ASSEMBLY

1. Remove three choke coil housing attaching screws and choke coil housing and thermostatic coil.

2. Remove coil housing gasket and baffle plate.

3. Remove choke lever attaching screw and retaining washer (Fig. 11). Remove choke piston, lever and link assembly by roating piston from bore.

4. Remove three choke housing to body attaching screws (Fig. 11), and remove choke housing and gasket.

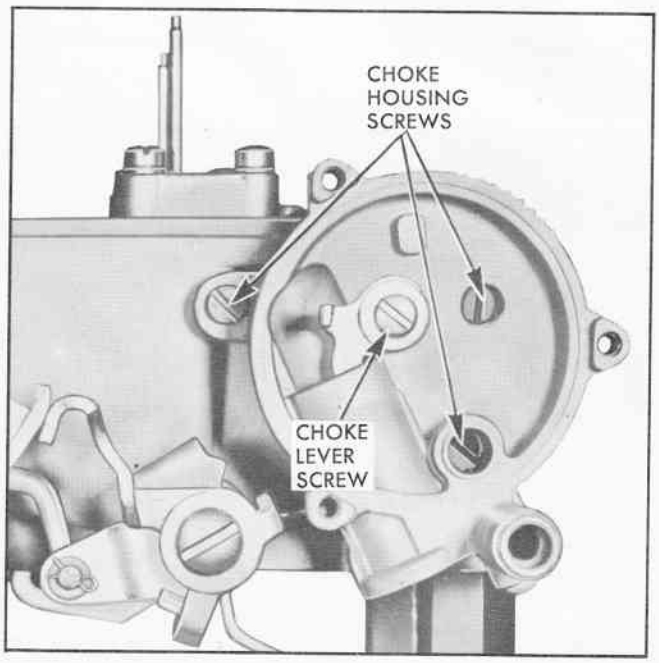

Fig. 11 Location of Choke Housing Screws

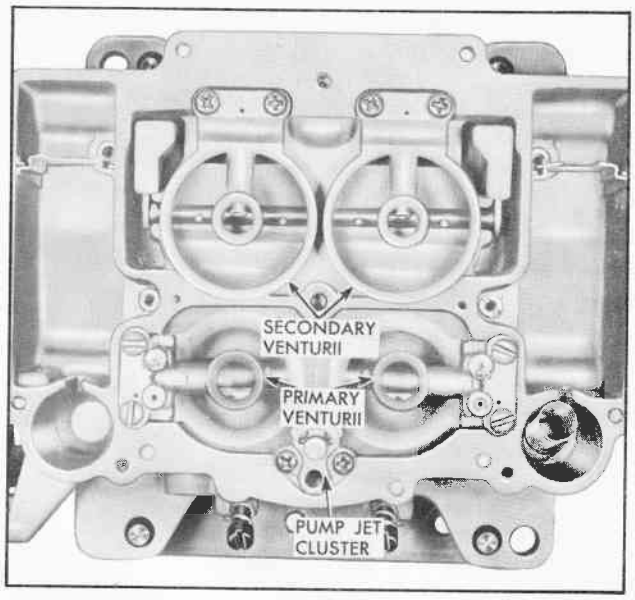

Fig. 12 Top View of Carburetor Body Assembly

5. Remove lower choke lever and shaft from choke housing.

6. Remove pump jet cluster and gasket (Fig. 12).

7. Remove two screws and primary venturi and gasket on pump side (Fig. 12).

8. Remove two screws and primary venturii and gasket on choke and pump sides. NOTE: The Venturii assemblies are not interchangeable.

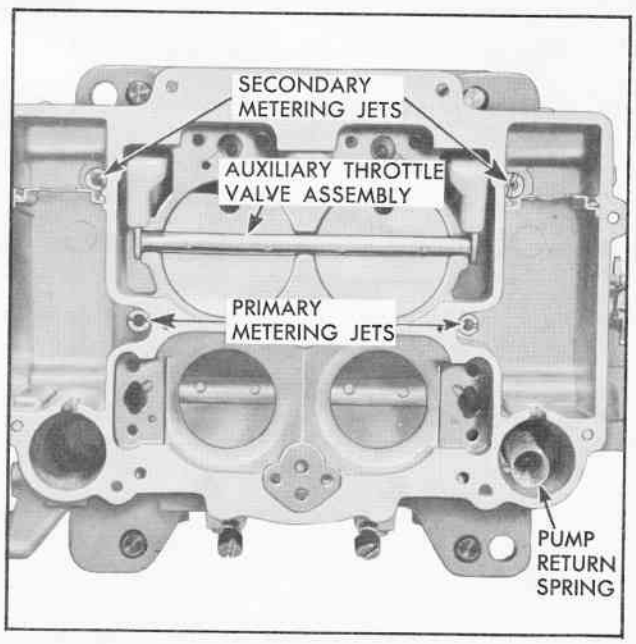

Fig. 13 Body Assembly with Clusters Removed

9. Remove secondary venturii on pump and choke sides (Fig. 12).

10. Lift out auxiliary throttle valve, shaft and weight assembly (Fig. 13). If necessary auxiliary throttle valves can be removed from shaft by removing attaching screws.

11. Remove two primary metering jets (Fig. 13).

12. Remove two secondary metering jets (Fig. 13).

13. Remove pump return spring (Fig. 13).

14. Remove idle mixture screws.

15. Carefully invert carburetor body and remove pump discharge check needle (Fig. 13).

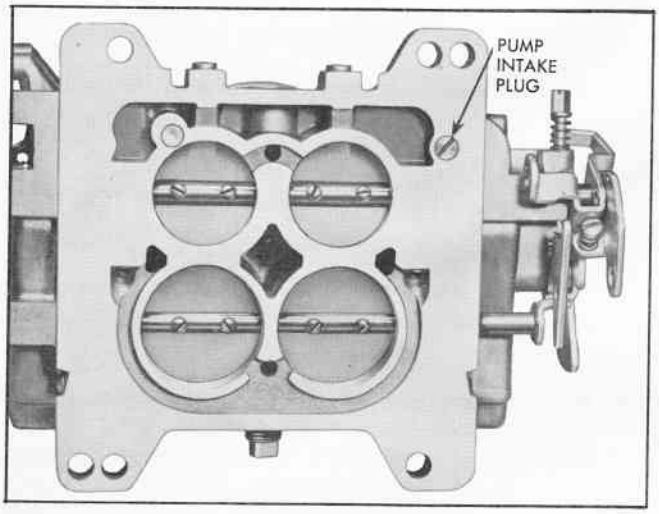

Fig. 14 Location of Pump Intake Screw Plug

16. With body inverted remove pump intake screw plug (Fig. 14). Remove pump intake check ball seat, found under plug and remove check ball.

17. Remove throttle lever adjusting screw and spring.

18. Remove fast idle cam attaching screw, fast idle cam, spacer and lockout lever (Fig. 15).

19. Remove primary to secondary throttle operating rod (Fig. 16).

20. Remove screw, secondary throttle shaft washer and secondary throttle operating lever and spring (Fig. 16).

21. Unhook throttle flex spring from primary outer throttle shaft arm (Fig. 16).

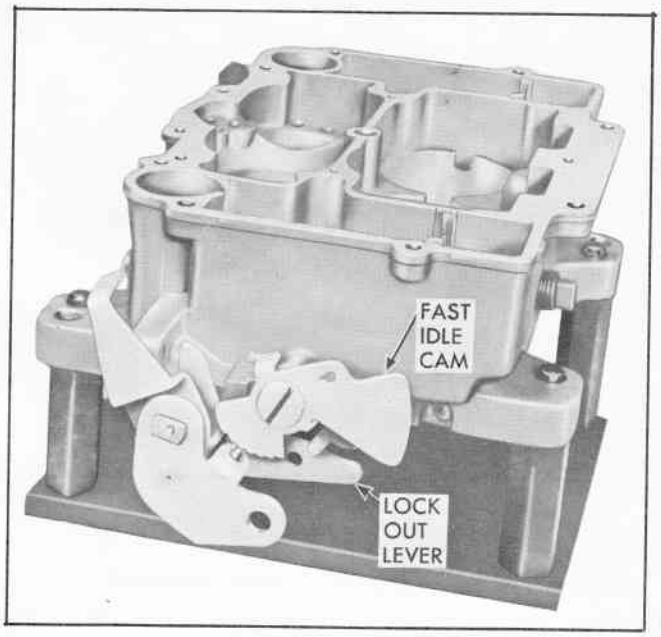

Fig. 15 Location of Fast Idle Cam and Lockout Lever

22. Remove primary throttle shaft lever attaching screw and washer from primary throttle shaft.

23. Remove outer throttle shaft arm and throttle shaft dog (Fig. 16).

24. Remove inner throttle shaft arm and flex spring.

25. If necessary to remove throttle shafts remove throttle valve attaching screws, throttle valves and slide shaft from carburetor body.

26. Remove fast idle adjusting screw if necessary to replace.

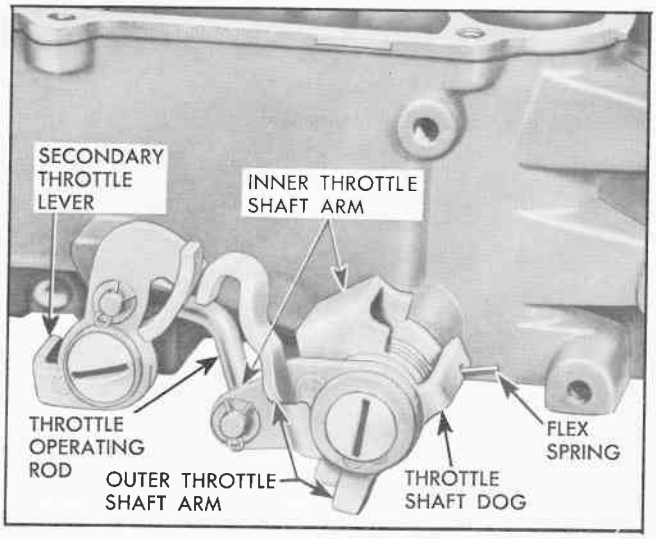

Fig. 16 Primary and Secondary Throttle Linkage

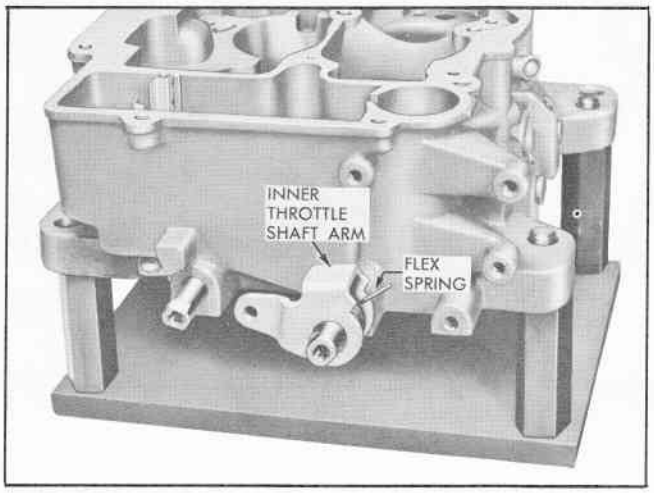

Fig. 17 Inner Throttle Shaft Arm and Flex Spring Installed

ASSEMBLY AND ADJUSTMENTS

Assembly of Throttle Body

1. If throttle shafts were removed during disassembly insert shafts through body with lever ends on pump side of body.
2. Using new screws install primary and secondary throttle valves so that trade mark (c in circle) is visable from bottom of body with throttle valves closed.
3. Install fast idle adjusting screw.
4. Install pump check ball, ball seat and intake screw plug.
5. Place carburetor body on stand J-5923.
6. Install inner throttle shaft arm and flex spring on primary throttle shaft (Fig. 17).

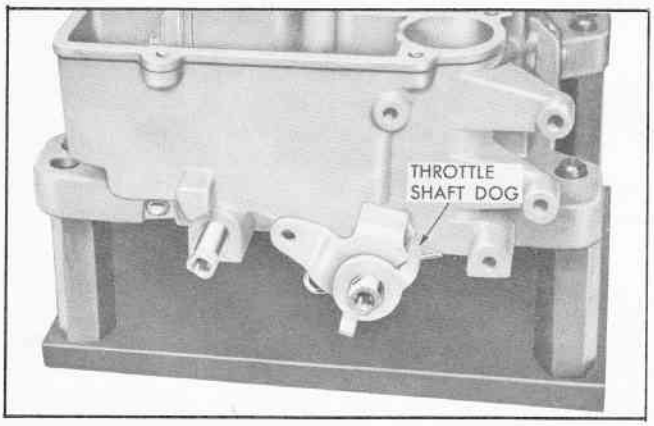

Fig. 18 Throttle Shaft Dog Installed

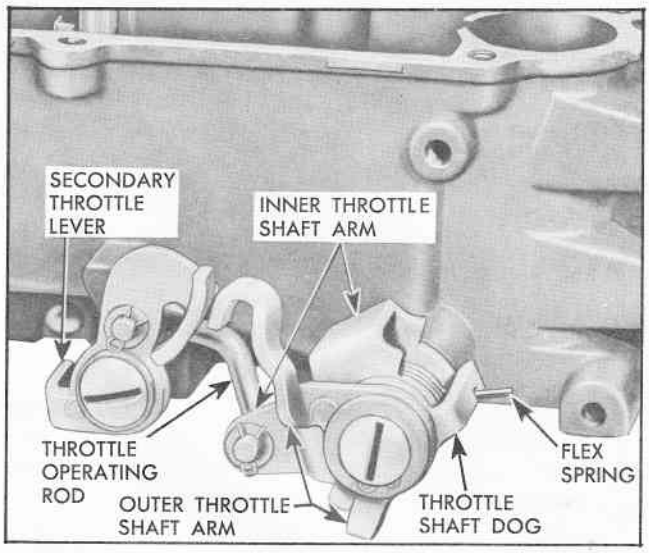

Fig. 19 Primary and Secondary Throttle Linkage

7. Install throttle shaft dog on primary throttle shaft (Fig. 18).
8. Install outer throttle shaft arm, washer and retaining screw on primary throttle shaft (Fig. 19).
9. Hook end of flex spring into notch on outer throttle shaft arm.
10. Install secondary throttle operating spring, lever, washer and screw (Fig. 19). Wind spring two turns tight.
11. Install throttle operating rod, washers and spring clips.
12. Install lockout dog, spacer, fast idle cam and screw (Fig. 20).

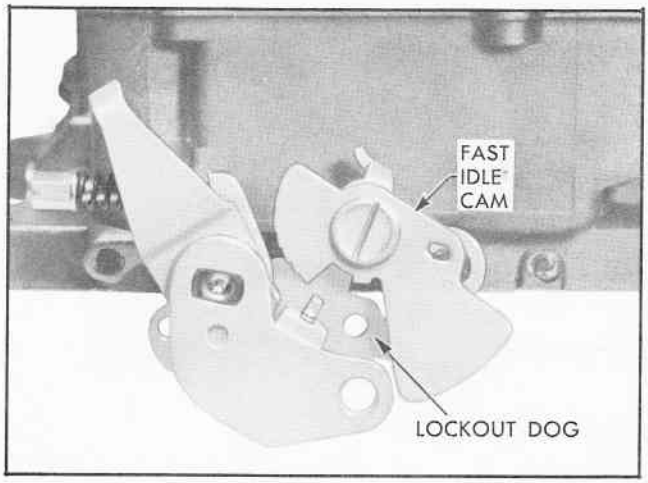

Fig. 20 Lockout Dog and Fast Idle Cam Installed

13. Install throttle lever screw and spring.

14. Install idle mixture screws. Turn in finger tight and back out 1-1/2 turns for approximate adjustment.

15. Install primary metering jets and secondary metering jets in their respective bores.

16. Set auxiliary throttle valves in place.

17. Install secondary venturii and gaskets on choke and pump sides.

18. Install primary venturi and gaskets on choke and pump side of carburetor (Fig. 1). NOTE: Primary ventirii are installed with vent tubes towards secondary side of carburetor.

19. Install pump discharge check needle, point down, and pump jet cluster and gasket with two screws.

20. Install pump plunger return spring in pump bore.

21. Install lower choke shaft and lever in choke housing and attach choke housing and gasket to carburetor body with three self tapping screws.

22. Install choke piston and link assembly in choke housing.

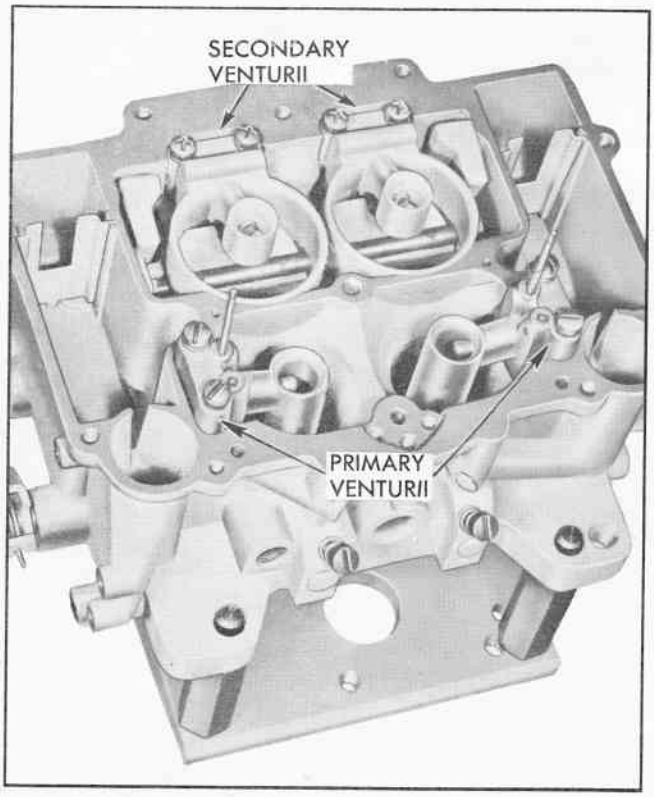

Fig. 21 Primary Venturi Correctly Installed

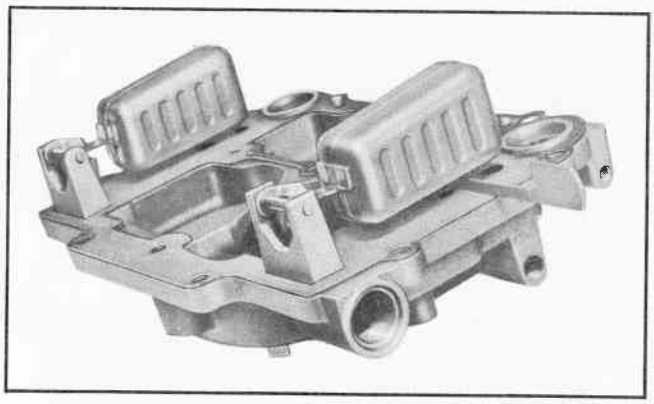

Fig. 22 Float Level Check

23. Attach choke piston linkage to lower choke shaft with screw and spacer washer. NOTE: Before proceeding with next step perform Choke Shaft Lever adjustment. Procedure is found under Adjustments, Page 12.

24. Install choke baffle plate, cover gasket, and choke cover and spring assembly. Set choke at center index.

ASSEMBLY OF AIR HORN

1. Slide choke shaft into air horn.

2. Install air horn gasket.

3. Install float needle seat and gasket, float needle and float assembly on pump side of air horn.

4. Install float needle seat and gasket, float needle and float assembly on choke side of air horn.

FLOAT ADJUSTMENT

1. Alignment -

   a. Sight down side of the float shell to determine if side of float is parallel to outer edge of air horn casting. TO ADJUST: Bend float lever by applying pressure to end of float shell with fingers while supporting float lever with thumb. CAUTION: To avoid damaging float, apply only enough pressure to bend float lever.

   b. After aligning float, remove as much clearance as possible between arms of float lever and lugs on air horn by bending float lever. Arms of float lever should be as parallel to inner surfaces of lugs on air horn as possible. Floats must operate freely without excess clearance on hinge pin.

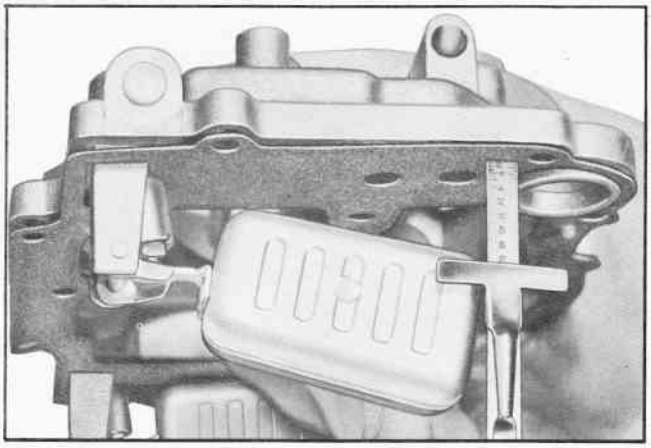

Fig. 23 Checking Float Drop

2. Level (Fig. 22).

   With air horn inverted, bowl cover gasket in place, and needle seated, there should be 17/64" ± 1/64" clearance between top of float at outer end and air horn gasket, use gauge J-6834. To adjust, bend float arm. Adjust both floats. Recheck float alignment.

3. Drop (Fig. 23)

   With bowl cover held in upright position and measuring from outer end of each float, distance between top of floats and bowl cover gasket should be 23/32" ± 1/32". To adjust, bend stop tabs on float brackets.

COMPLETION OF CARBURETOR ASSEMBLY

1. Insert pump plunger shaft through air horn and retain with pump link.

2. Install air horn attaching screws (Fig. 24).

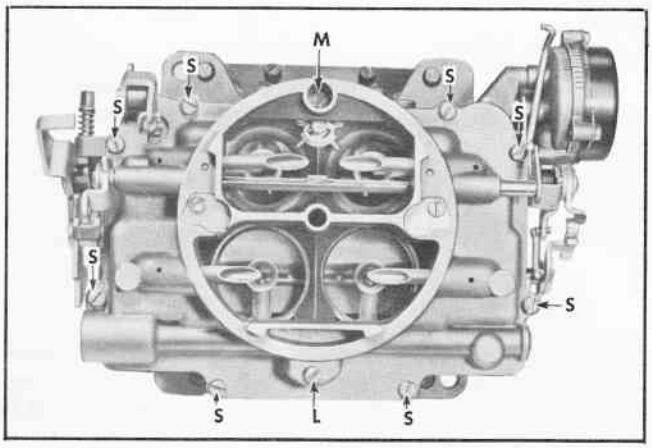

Fig. 24 Location of Air Horn Attaching Screws
L = Long, M = Medium, S = Short

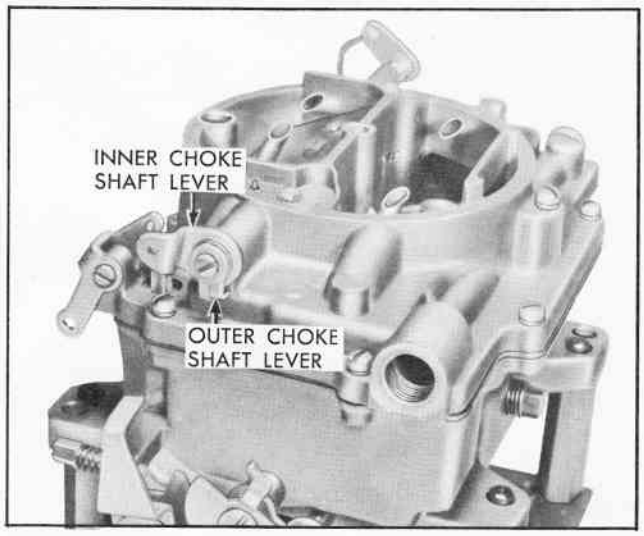

Fig. 25 Choke Shaft Levers Installed

3. Install two step-up rod piston springs in their respective bores.

4. Install step-up rod and piston on pump side of carburetor.

5. Install step-up rod and piston on choke side of carburetor.

6. Install two step-up piston cover plates and screws.

7. Install pump arm to air horn casting and connect to pump link with pin spring.

8. Install choke valve with circle c in trademark visable with the choke valve closed.

9. Install choke connector rod between upper and lower choke lever.

10. Install inner choke shaft lever, washer, and outer choke shaft lever on end of choke shaft (Fig. 25).

11. Install fast idle connector rod between fast idle cam and inner choke shaft lever.

12. Install throttle connector rod, washers and anti-rattle spring.

13. Install inlet screen plug and gasket.

ADJUSTMENTS

PUMP ADJUSTMENT

1. Back off idle speed screw until throttle valves seat in bores of carburetor. NOTE: Be sure choke is wide open so fast idle cam does not hold throttle valves open.

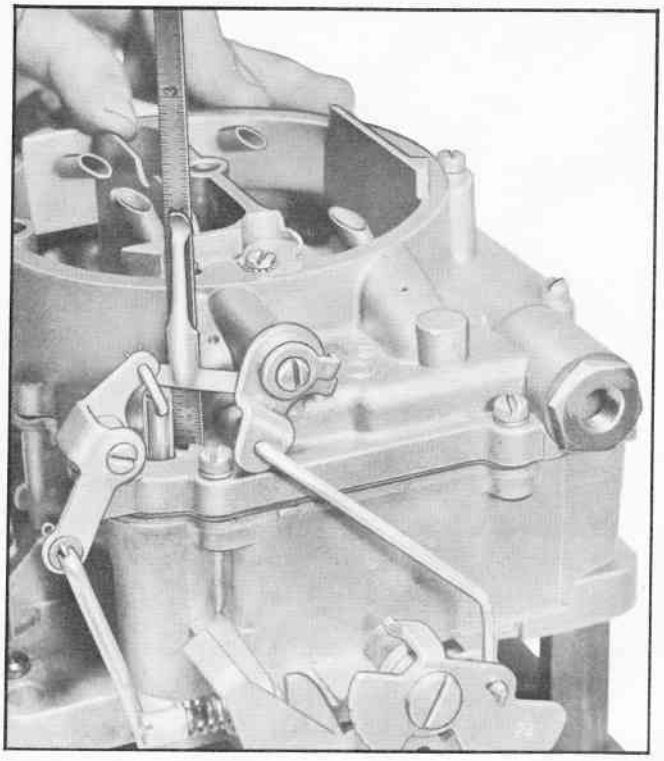

Fig. 26 Checking Pump Adjustment

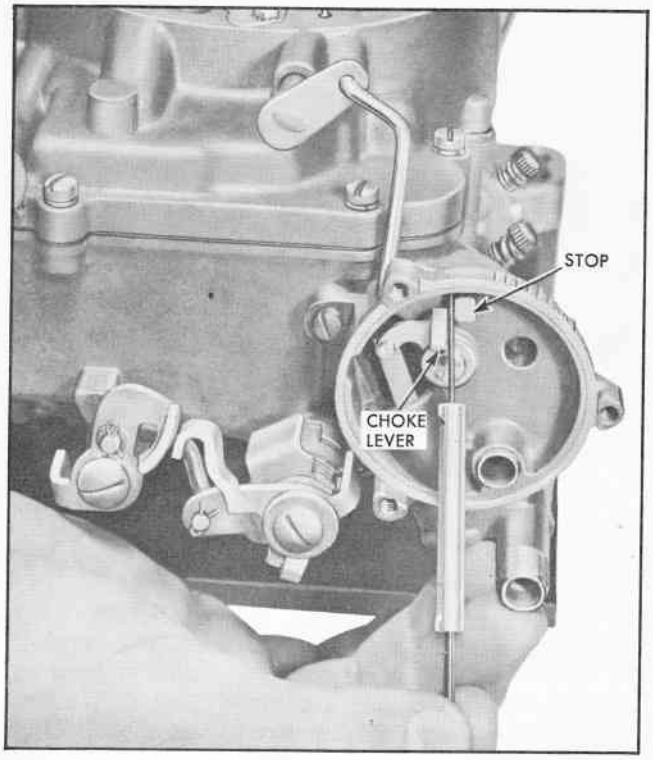

Fig. 27 Checking Choke Piston Lever Adjustment

2. Distance from top of bowl cover to top of plunger shaft should be 9/16" (Fig. 26).

3. To adjust, bend throttle connector rod at lower angle using tool J-5496.

CHOKE PISTON LEVER ADJUSTMENT

1. Remove three choke coil housing screws and choke coil housing and thermostatic coil.

2. Remove coil housing gasket and baffle plate.

3. Completely close choke valve.

4. There should be .045" clearance (Gauge KMO-480-A) between choke lever and stop in piston housing (Fig. 27).

5. To adjust, bend choke connector rod using tool J-5496.

CHOKE SHAFT LEVER ADJUSTMENT

1. Close choke valve having fast idle cam against stop on casting.

2. There should be .010" clearance (gauge J-5640) between lug on outer choke shaft lever and stop on inner choke shaft lever (Fig. 28).

3. To adjust, bend lug on outer choke shaft lever.

FAST IDLE ADJUSTMENT

1. Close choke valve tightly.

2. Tighten fast idle screw on high step of cam until there is .030" clearance (Gauge J-1388) between primary throttle valve and bore of carburetor, directly opposite idle port (Fig. 29).

SECONDARY THROTTLE LEVER ADJUSTMENT

1. Open fully both sets of throttle valves. (In this position the stop lugs on primary and secondary throttle levers should contact the boss on the flange.)

2. To adjust, bend seconary throttle operation rod at angle. NOTE: Primary throttle valves will be a few degrees past vertical and secondary throttle valve will be a few degrees from vertical at wide open throttle.

3. Now close primary and secondary throttle valves tightly.

4. There should be .017-.022" clearance (Gauge J-1388) between positive closing shoes on primary and secondary throttle levers (Fig. 30).

5. To adjust, bend shoe on primary lever.

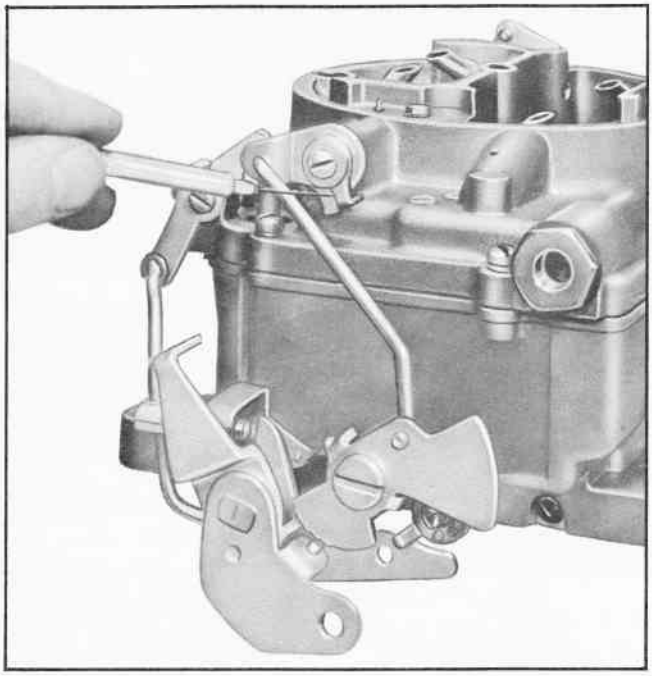

Fig. 28 Checking Choke Shaft Lever Adjustment

SECONDARY THROTTLE LOCKOUT ADJUSTMENT

1. Crack throttle valves and manually open and close the choke valve.

2. Tang on secondary throttle lever should freely engage in notch of lock-out dog.

3. If necessary to adjust, bend tang on secondary throttle lever.

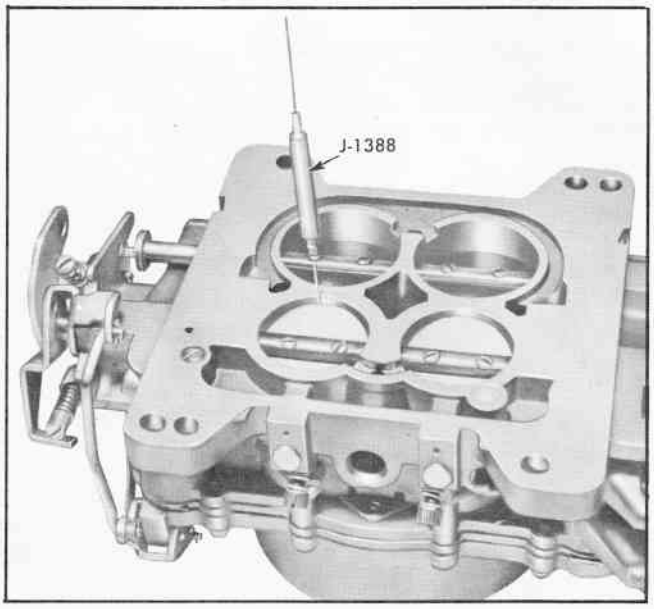

Fig. 29 Checking Fast Idle Adjustment

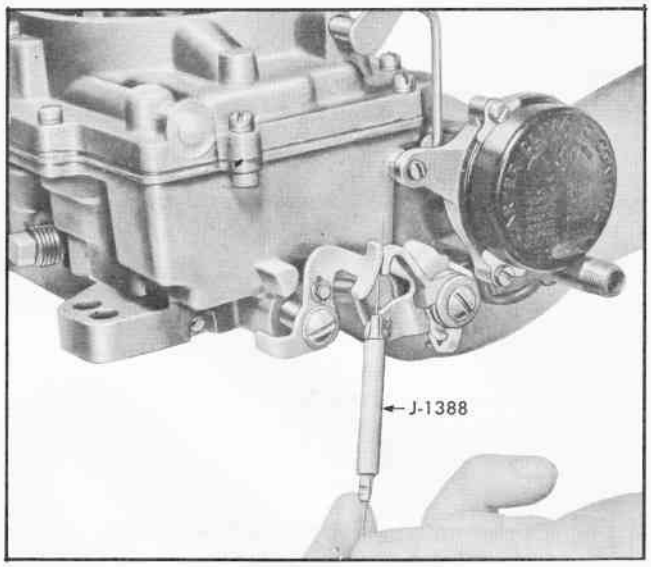

Fig. 30 Checking Secondary Throttle Lever Adjustment

MAKE RADIO ANTENNA TRIMMER ADJUSTMENT THROUGH HOLE IN TOP OF GLOVE BOX

The radio antenna trimmer adjustment can be made through a hole in the top of the glove box on all Deluxe radios and late production Deluxe Electra-matic radios. Some early production Deluxe Electra-matic radios have the trimmer screw located on the right side of the unit, necessitating the use of a long screwdriver for the adjustment.

In order to make the antenna trimmer adjustment, on later production radios the car should be outdoors and as far removed from electrical disturbances as possible. Extend the antenna to its full height. Tune in a weak station between 600 and 1000 kilocycles where it is possible to turn the volume control full on. This is necessary in order to offset the action of the automatic volume control. Using a screw driver inserted through the hole in the top of the glove box, turn the trimmer adjusting screw clockwise until the station fades out. Turn the screw counterclockwise until the station peaks in volume and starts to fade. Then adjust the trimmer screw between these two extremes for maximum volume.

The antenna trimmer adjustment should be made on new car pre-delivery inspection and also after a set has been removed from the car and worked on by a radio repair man. The reason for trimming the antenna after service work has been performed is that the radio repair man will undoubtedly have adjusted the trimmer to match his antenna so that it no longer matches the antenna in the car from which it was removed. Trimming the antenna is especially important with the Deluxe Electramatic radio inasmuch as this will directly affect the sensitivity control of the selector bar.

1957 ACCESSORY FLAT RATE TIMES

14-35 Clock, Electric - Install

55 - 56 - (.3)
57 - (.4)

14-50 Direction Signal Control Assembly - Replace

55 - 56 - (.7)
57 - (.6)

Combination A (55 & 56 only)

14-51 Direction Signal Handle - Replace

55 - 56 - (.3)
57 - (.2)

14-53 Direction Signal Switch Base and/or Wire Assembly - Replace

55 - 56 - (.8)
57 - (.2)

14-60 Dual Exhausts - Install

56 - (2.6)
57 - (2.3)

14-115 Heater Blower Assembly - Replace

55 - 56 - (1.2) Includes: R & R Hood and Left Hood Hinge
57 - (1.5) Includes: R & R Left Fender Outer Panel Assembly

14-120 Heater Blower Motor Switch - Replace

55 - 56 - (.5)
57 - (.3)

1957 Models with Radio add (.1)

14-144 Heater and Defroster Control Housing Assembly - Replace

55 - 56 - (.9)
57 - (.5)

1957 Models with Radio add (.1)

Combinations

A. Overhaul Control Assembly (.1)

14-160 Lighted Fender Ornaments - Install (.5)

14-162 Lighted Fender Ornaments - Replace (.2)

14-170, 14-175 Not Available

14-222 Parking Brake Signal - Install

55 - 56 - (.8)
57 - (.4)

14-224, 14-226 1955 - 56 time applies to Parking Brake

14-300 Radio Assembly - Install Deluxe (1.0)
Electromatic (1.1)

14-325 Radio Assembly - Remove and Replace for repair
1957 Deluxe (.6)
Electromatic (.7)

Includes: R & R Speaker, Receiver, and Power Unit

Cars equipped with Rear Seat Speaker add (.1)

14-237 Radio Audio - Power Unit - Remove and Replace for repair

55 - 56 - (.2)

1957 Electromatic Power Unit - (.2)

14-329 Radio Tuner Assembly (Receiver) - Remove and Replace for Repair

55 - 56 - (.5)
57 - (.6)

Cars equipped with Rear Seat Speaker add (.1)

14-333 Radio Tubes and Vibrator Test

55, 56, 57 - (.9)
57 Electromatic (1.0)

14-335 Radio Speaker - 1957 - Replace (.2)

14-360 Radio Electric Antenna - Install

Includes: Test Antenna

55 - (1.4)
56 - (1.7)
57 - (1.5)

1957 models with Dual Exhaust add (.5)

14-364 Electric Antenna Mast and Nylon Strip - Replace (.8)

Includes: R & R Tube Body Assembly

1957 models with Dual Exhaust add (.5)

Combination

A. Electric Antenna Motor Assembly - Replace (.2)

14-366 Electric Antenna Motor Assembly - Replace (1.0)

1957 models with Dual Exhaust add (.5)

14-444 Steering Wheel - Accessory - Install

55 - 56 - (.2)
57 - (.4)

14-482 Windshield Washer - Install

55 - (1.2)
56 - (1.8)
57 - (1.2)

14-500, 14-502 Not Available

1957 POWER STEERING FLAT RATE

9-52 Power Steering Gear Assembly - Replace

Includes: R & R 4 barrel carburetor air cleaner, and left engine side apron.

1957 - (1.2)

CHECKING ENGINE COOLANT

The cooling system for 1957 uses a 13 lb. pressure cap and 170° thermostat (Air Conditioning, 15 lb. pressure cap). If Anti-Freeze is added to cooling system or cooling system anti-freeze solution is to be checked, the following procedure should be followed:

1. Allow engine to idle until cooling system is up to operating temperature with pressure cap on.
2. Shut off engine and allow to cool for about 20 minutes or until careful opening of radiator cap shows pressure in system has been completely dissipated.
3. Check coolant and add Anti-Freeze as necessary.

FIELD INSTALLATION OF ELECTRIC CLOCK

It has been reported that a number of Instrument Panel Trim Plates have been damaged when field installation of an Electric Clock has been attempted.

The following procedure is suggested for field installation. These instructions should be used in conjunction with the Installation Drawing enclosed in each Electric Clock Package.

1. Drill a clean 1/4 inch diameter hole at center of patterned surface at clock location.
2. Using a standard 2-5/8 inch diameter fine tooth hole saw*, cut out patterned area as shown in Installation Drawing. A piece of 1/4 inch DRILL ROD should be used as a pilot for the hole saw.

   CAUTION: A 1/4 inch drill should not be used in place of drill rod as a pilot. This usage will damage a drill.
3. Finish file hole to fit clock and file out notch at bottom to fit locater key. (Shown in Installation Drawing.)
4. Install clock with bracket and attaching parts.

*A fine tooth hole saw should be used to prevent damaging the instrument panel trim plate. One manufacturer of this saw blade is Black and Decker. It is listed in their catalog under number 16898.

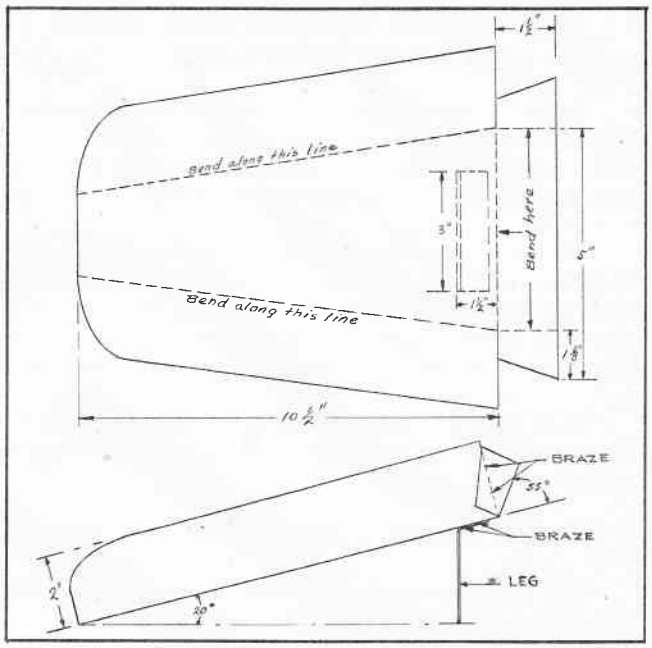

Fig. 31 Radiator Drain trough

TROUGH AIDS IN DRAINING RADIATORS

Product Information reports have been received stating that it is difficult to drain the radiators on 1957 cars without losing some of the coolant. Figure 31 is the drawing of a simple drain trough which has been designed to aid in the draining of radiators, for servicing cooling systems. This trough can be made from galvanized tin or copper sheeting.

The trough is installed for draining as shown in Fig. 32. The use of a large drain pan is recommended because a slight amount of coolant may splash on the bumper face bar. If the coolant is hot, allow the engine to cool down until the pressure in the system has been dissipated before removing radiator cap. Adjust the drain cock so that coolant flows in a steady even stream.

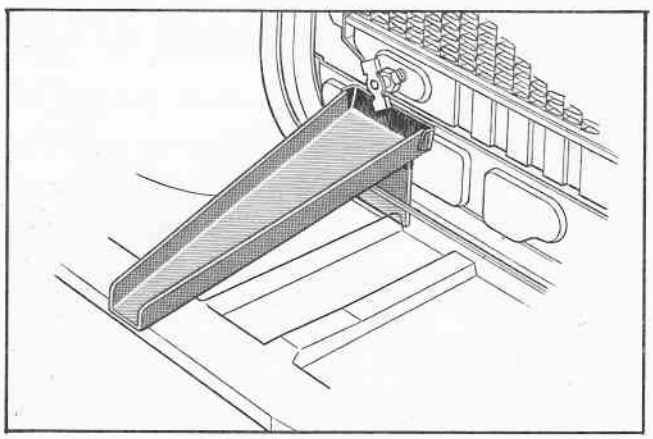

Fig. 32 Radiator Drain Trough Installed

POWER BRAKE SEAL INSTALLER J-5405 MUST BE MODIFIED

Power Brake Seal Installer J-5405 must be modified before it can be used on any 1957 model Pontiac. The change is necessary due to the interference of the reaction rod on the 1957 Bendix Power Brake Unit.

To make the seal installer applicable to 1957 models, drill a 1/4 inch diameter hole through the head of the tool. Start the drill at the hollow end of the tool to eliminate the need for center punching. The tapor formed in production will center the drill.

This hole will provide adequate clearance for the 1957 reaction rod and will have no effect on earlier model usage.

FUEL PUMPS AND LINES CHANGED

The combination fuel and vacuum pump assembly now being used in production contains a type of fuel cover different from that used in early model production. The cover has larger inlet and outlet valves, and the inlet strainer screen is located underneath the inlet valve.

The single type fuel pump used on electric wiper equipped cars, now contains an inlet strainer screen also located underneath the inlet valve. Both pumps are installed with 3/8 inch fuel lines and connections.

HYDRA-MATIC HEAVY DUTY OIL COOLER AVAILABLE

A Hydra-Matic Heavy Duty Oil Cooler is available as a factory installed accessory for 1957. It can be ordered under group "T" to sell at a nominal suggested list price of $3.70, plus $ .30 E.O.H.

It is recommended that this accessory be used on Hydra-Matic equipped special police models, sheriff patrol cars, taxi cabs, ambulances, mail carriers and any other models which are subjected to continued severe service.

TEMPERATURE CONTROL VALVE NOW ADJUSTED AT 85°

A change has been incorporated in the heater Temperature Control Valve which will afford the driver a greater range of temperature adjustments to suit his own comfort requirements. This change consists of increasing the calibration temperature of the valve, from 75° to 85°.

All control valves currently being installed in 1957 models have the 85° temperature setting. However, all earlier production valves are set at 75° and could result in inadequate heat.

In cases of owner complaint, the early valve with the lower calibration can be adjusted upward to the 85° setting. This adjustment should not be made until other possible causes for the low-heat condition have been checked. The new setting was begun at Ranco, Inc. on December 3, 1956. There are no identification markings to indicate if the valve has been set at 75° or 85°.

Possible causes for insufficient heat which should be checked before adjusting the valve are: kinked heater hoses, clogged cooling system, low coolant level, damaged radiator core, defective cooling system thermostat, front floor mat covering heater duct.

If a thorough inspection reveals that none of these factors are causing the difficulty, the valve may be adjusted.

The adjustment is made by inserting a cross-recess screwdriver through the access hole in the bottom of the Temperature Control Valve case and turning the screw 1-1/2 turns clockwise. No damage will result if the valve with an 85° calibration is adjusted. However, a higher adjustment will raise the selectivity range too high for normal driver comfort.

The containers of service parts will now be marked "85" under the part name.

SERVICE MANAGER—IMPORTANT

This News contains important service information on Pontiac cars. Each subject should be cross-referenced in the space provided at the end of each section in the Shop Manual or its Supplement. ***Be sure and cover every point with your entire organization.***

Each service man should sign in the space below after he has read and understands the information in this issue.
