

Group 14

FUEL SYSTEM

CONTENTS

FUEL PUMP

	Paragraph	Page
Fuel Pump Disassembly	7	5
Removal		
Cleaning and Inspection		
Assembly		
Operation (Fuel Pump)	5	4
Service Diagnosis	1	3
Fuel Pump Testing (on Vehicle)	6	4
Pressure Test		
Vacuum Test		
Volume Test		
Inlet Valve Test		

BBD SERIES CARBURETORS

Automatic Choke — Well Type	19	15
Carburetor Adjustments	18	13
Accelerator Pump		
Fast Idle Adjustment		
Choke Unloader (Wide Open Kick)		
Bowl Vent Valve Adjustment		
Idle Speed Adjustment (Curb Idle)		
Carburetor Disassembly	15	9
Cleaning Carburetor	16	11
Inspection and Reassembly	17	11
Throttle Body		
Main Body		
Checking Float Setting		
Air Horn		
Service Diagnosis	8	7
Servicing the Carburetor	14	9

AFB SERIES CARBURETORS

Automatic Choke (Well Type)	24	25
Carburetor Adjustments	23	24
Fast Idle Adjustment		
Choke Unloader Adjustment		
Accelerator Pump Adjustment		
Secondary Throttle Lever Adjustment		
Secondary Throttle Lock-Out Adjustment		

AFB SERIES CARBURETORS—Continued

CONTENTS—Continued

	Paragraph	Page
Carburetor Assembly	22	21
Main and Throttle Body Casting		
Accelerator Pump Test		
Intake Check Ball		
Discharge Check Needle		
Air Horn-Assembly		
Float Alignment Setting		
Float Level Setting		
Float Drop Setting		
AFB Carburetor — Disassembly	21	18
Air Horn — Disassembly		
Main Body Disassembly		
Cleaning and Inspection		
Idle Speed Adjustment (Curb Idle)	25	26
Servicing the Carburetor	20	18

FUEL TANK

Fuel Tank (All Models Except Town and Country and Imperial)	26	28
Removal		
Installation		
Fuel Tank (Imperial)	27	29
Removal		
Installation		
Fuel Tank (Town and Country)	28	30
Removal		
Installation		

RAM MANIFOLD

Adjusting the Anti-Stall Device	32	36
Adjusting the Ram Manifold	33	36
AFB 2903S Series Carburetor		
Idle Speed and Mixture Adjustment (On Vehicle)		
Fast Idle Adjustment (On Vehicle)		
Indexing the Choke Piston		
Ram Manifold — Removal	29	32
Ram Manifold — Installation	30	34
Setting the Ram Manifold Throttle Linkage	31	35
Positioning the Accelerator Shaft		
Positioning the Accelerator Pedal		

DATA AND SPECIFICATIONS

FUEL PUMP

ENGINE	361 Cu. In. V-8	383 Cu. In. V-8	413 Cu. In. V-8
Make	Carter		
Model	M-2769S		
Type	Diaphragm		
Number of Valves	3		
Driven By	Camshaft		
Pump Pressure (Pounds)	3½ to 5		

SPECIAL TOOLS

T109-43.....	Plug Remover
C-3411.....	Pressure Gauge

SERVICE DIAGNOSIS

1. FUEL PUMP LEAKS—FUEL

Possible Causes:

- a. Loose housing screws.
- b. Worn, ruptured or torn diaphragm.
- c. Loose diaphragm mounting plates.
- d. Loose inlet or outlet line fittings.

2. FUEL PUMP LEAKS—OIL

Possible Causes:

- a. Cracked or deteriorated pull rod oil seal.
- b. Loose rocker arm pivot pin.
- c. Loose pump mounting bolts.
- d. Defective pump to block gasket.

3. INSUFFICIENT FUEL DELIVERY

Possible Causes:

- a. Vent in tank filler neck restricted. (This will also cause collapsed fuel tank.)

- b. Leaks in fuel line or fittings.
- c. Dirt or restriction in fuel tank.
- d. Worn, ruptured, or torn diaphragm.
- e. Frozen gas lines.
- f. Improperly seating valves.
- g. Vapor lock.
- h. Weak main spring.
- i. Incorrect fuel pump.
- j. Restricted fuel filter.

4. FUEL PUMP NOISE

Possible Causes:

- a. Loose mounting bolts.
- b. Scored or worn rocker arm.
- c. Weak or broken rocker arm spring.

Group 14

FUEL SYSTEM

FUEL PUMP

Fuel pump Model M-2769S is used on all De Soto, Chrysler and Imperial engines. The service procedures for testing, disassembly, overhaul, cleaning and reassembly of the fuel pump appears below.

5. OPERATION—FUEL PUMP

The fuel pump (Fig. 1) is driven by an eccentric cam (cast integral with the camshaft) through the medium or a short push rod.

As the camshaft rotates, the eccentric cam presses against the push rod, forcing the pump rocker arm down. This action lifts the pull rod and diaphragm upwards against the fuel pump main spring, thus creating a vacuum in the valve housing, which opens the inlet valves, forcing fuel into the valve housing chamber. On the return stroke, the main spring forces the diaphragm to the down position which closes the inlet valves and expels the fuel in the valve housing chamber, through the outlet valve to the fuel filter and the carburetor.

The fuel filter assembly should be changed every 10,000 miles, to insure having an unrestricted flow of fuel at all times. **DO NOT ATTEMPT TO CLEAN.**

6. TESTING FUEL PUMP—(On Vehicle)

If the fuel pump fails to supply fuel properly to the carburetor, the following tests should be made before removing the fuel pump from the vehicle.

a. Pressure Test

If leakage is not apparent, test pump for pressure, as follows:

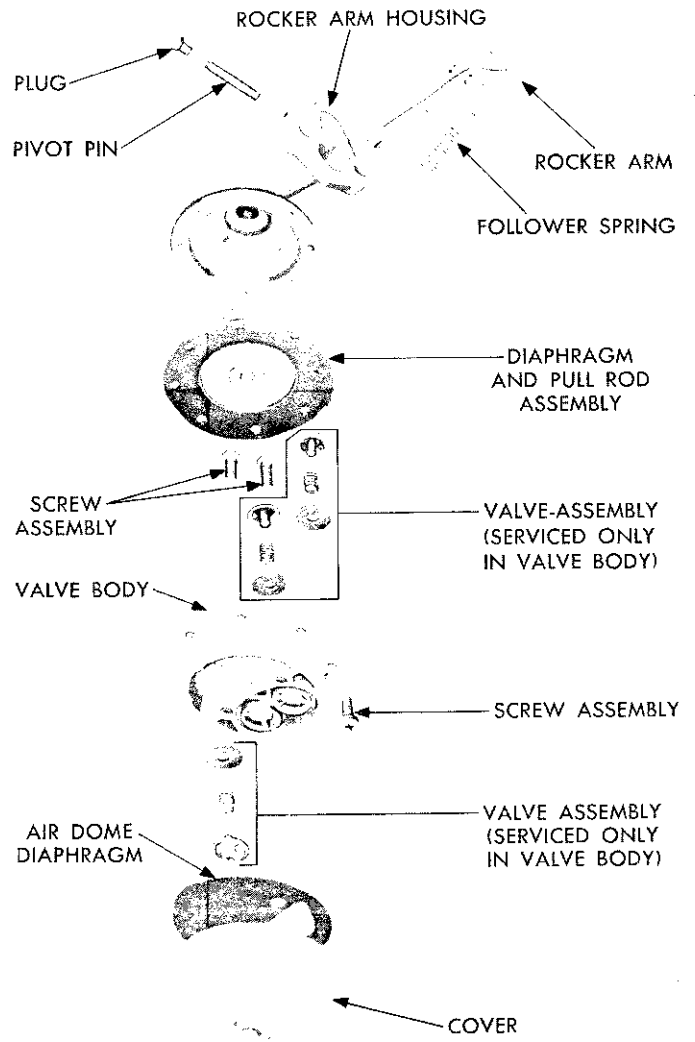
(1) Insert a "T" fitting in the fuel line at the carburetor, as shown in Figure 2.

(2) Connect a 6 inch piece of hose between the "T" fitting and gauge C-3411. (The hose should not exceed 6 inches. A longer hose may collect fuel and the additional weight would be added to the pressure of the pump and result in an inaccurate reading.)

(3) Vent the pump for a few seconds (this relieves any air trapped in the fuel chamber). If this is not done, the pump will not operate at full capaci-

ty and a low pressure reading will result.

(4) Connect a tachometer, then start the engine and run at 500 r.p.m. The reading should be from $3\frac{1}{2}$ to 5 p.s.i. The pressure should remain constant or return to zero very, very slowly when the engine is stopped. An instant drop to zero indicates a leaky outlet valve. If the pressure is too low, a weak main spring or improper assembly of the diaphragm may be the cause. If the pressure is too high, the main spring is too strong.



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Fig. 1—Fuel Pump M-2769S (Exploded View)

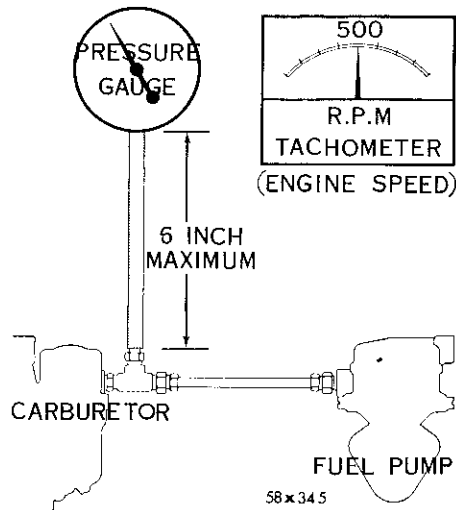


Fig. 2—Pressure Testing Fuel Pump

b. Vacuum Test

The vacuum test should be made with the fuel line disconnected from the carburetor. (This will allow the pump to operate at full capacity, which it must do to prime a dry carburetor.)

The vacuum reading should be at least 10" h.g. vacuum at 500 r.p.m. with the fuel line disconnected at the carburetor.

c. Volume Test

The fuel pump should supply 1 quart of fuel in 1 minute or less at 500 r.p.m.

d. Inlet Valve Test

To test the inlet valve, connect a vacuum gauge on the inlet fitting while the line is disconnected.

(1) Start the engine or turn over with starting motor.

(2) There should be a noticeable vacuum present, not alternated by blowback.

(3) If blowback is present, the inlet valves are not seating properly and should be cleaned, or a new valve body installed.

If the fuel pump does not perform to the above test requirements, the fuel pump should be removed from the vehicle and reconditioned as follows:

7. FUEL PUMP DISASSEMBLY (Fig. 1)

NOTE: Before disassembling the fuel pump, mark the housings in such a manner that the "Inlet" will be facing the inlet fuel line when reassembled. This is important!

a. Removal

(1) Remove the pivot pin plug, using Tool T109-43.

(2) Disengage the rocker arm follower spring from the rocker arm and the rocker arm housing.

(3) Turn the pump on its side (pivot pin hole down) and tap gently to remove the pivot pin.

(4) Disengage the rocker arm from the diaphragm pull rod, by the sliding rocker arm out of the housing.

(5) Remove the screws attaching the valve body to the rocker arm housing. Separate the valve body and rocker arm housing and lift out the diaphragm and pull rod assembly.

(6) Remove the screws that attach the valve body to the valve housing cover. Separate cover and valve body and remove the outlet air dome diaphragm.

b. Cleaning and Inspection

(1) Clean all fuel pump parts (except diaphragm) in a suitable solvent, then blow dry with compressed air.

(2) Check the condition of the valve seats and parts for gum deposits.

(3) If gum deposits are found, remove with denatured alcohol.

(4) If the valves are badly worn or damaged, install a complete new valve body assembly. **The valves are not serviced individually.**

(5) Inspect the diaphragm for cracks, torn screw holes or ruptures. Check the rubber oil seal on the end of the pull rod for deterioration.

(6) Inspect the outlet air dome diaphragm for cracks or deterioration.

(7) Inspect the rocker arm for scoring or galling on the camshaft or push rod bearing surface.

c. Assembly (Fig. 1)

(1) Place the airdome diaphragm in position on the valve body or filter housing (depending on pump), with inlet passage hole over passage.

(2) Align the scribe marks on the cover (or filter housing, depending on pump) and the valve body, then install attaching screws. Tighten securely.

(3) Slide the diaphragm pull rod up into the rocker arm housing. Place the valve body in posi-

tion on the diaphragm with the scribe marks aligned. (Be sure the holes in the diaphragm, rocker arm housing and valve bodies are aligned.) Compress the unit together. Then install the attaching screws, but do not tighten. **NEVER USE SHELLAC OR ANY OTHER ADHESIVE ON THE DIAPHRAGM.**

(4) Slide the rocker arm into the housing and engage the diaphragm pull rod. Align the pivot pin holes in the arm with those in the housing, then install pivot pin. Install new plug and drive in securely.

(5) Install the rocker arm follower spring over the tab on the rocker arm and over the dimple in the housing.

(6) Engage the ends of the bowl retaining strap in the slots of the filter housing. Tilt the retaining strap to one side, far enough to install the ceramic filter.

(7) Install a new ceramic filter, spring and bowl. Center the bowl, then tighten the retaining screw securely.

(8) Place the pump in a vise (with protector jaws) and push on the rocker arm until full travel is reached. Hold in this position, while tightening the attaching screws. (This will prevent tearing of the diaphragm when the pump is in operation and the pump arm in its full stroke.)

(9) Test the fuel pump as described previously.

BBD SERIES CARBURETOR DATA AND SPECIFICATIONS

CARBURETOR

Type	Ball and Ball Dual Throat
Model	BBD-2923S or BBD-2924S

BORE	1-9/16"
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VENTURI	1-5/16"
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MAIN METERING JET

Standard	No. 120-245S	No. 120-238S
One Size Lean	No. 120-248S	No. 120-248S
Two Sizes Lean	No. 120-250S	No. 120-250S

ADJUSTMENTS

Float Setting (at center of floats)	9/32"
Accelerator Pump (top of plunger to air horn)	1 + or - 1/64"
Fast Idle	1375 to 1425 r.p.m.
Fast Idle Setting015"
Choke Unloader (wide open kick)	1/4"
Idle Mixture (both screws)	1 full turn open ± 1/2
Idle Speed (curb idle)	500 r.p.m.
(with air conditioning)	575 r.p.m.
Bowl Vent Valve Setting060"

CHOKE

Type	Well-Automatic
Control	Thermostatic Coil Spring
Setting	On Index

SPECIAL TOOLS

T109-287S.....	Elevating Legs (3)	
) Part of T109-289U
T109-288S.....	Elevating Legs (1)	
T109-239.....	Float Gauge (9/32")	
T109-44.....	Wire Gauge (.015" Fast Idle)	
T109-22.....	Bending Tool	
T109-31.....	Choke Unloader Gauge (1/4")	
.060".....	Drill (Bowl Vent Valve)	
T109-213.....	Bending Tool	

SERVICE DIAGNOSIS

8. POOR IDLING

Possible Causes:

- a. Incorrect air idle adjustment.
- b. Carbonized idle tube or poor seating shoulder.
- c. Manifold heat control valve stuck.
- d. Idle air bleed carbonized or of incorrect size.
- e. Idle discharge holes plugged or gummed.
- f. Throttle body carbonized or worn throttle shaft.
- g. Air leak at mounting between carburetor and manifold.
- h. Damaged or worn idle needle.
- i. Incorrect fuel or float level.
- j. Choke does not completely open.
- k. Loose main body to throttle body screws.
- l. Carburetor icing.
- m. Distributor advance vacuum leak.
- n. Loose distributor base plate bearing.
- o. Corroded wire ends or distributor towers.
- p. Incorrect distributor point gap.
- q. Fouled spark plugs.
- r. Incorrect ignition timing.
- s. Incorrect spark plug gap.
- t. Overheated spark plugs.
- u. Compression not within limits.

- v. Intake manifold leak.
- w. Internal coolant leak.
- x. Low boiling point fuel (winter fuel in summer).
- y. Low grade fuel.
- z. Incorrect valve timing.

9. POOR PERFORMANCE—MIXTURE TOO LEAN

Possible Causes:

- a. Damaged main metering jet.
- b. Damaged tip or bad top shoulder seat of main discharge jet.
- c. Vacuum piston worn or stuck.
- d. Incorrect fuel or float level.
- e. Automatic choke not operating properly.
- f. Incorrect fuel pump pressure.

10. POOR PERFORMANCE—MIXTURE TOO RICH

Possible Causes:

- a. Restricted air cleaner.
 - b. Excessive fuel pump pressure.
 - c. High float or fuel level.
 - d. Damaged needle and seat.
 - e. Leaking float.
 - f. Worn main metering jet.
 - g. Sticking choke.
-

11. EXCESSIVE FUEL CONSUMPTION

Possible Causes:

- a. Overloading (pulling trailers, etc.).
- b. Improper rear axle ratio.
- c. Wrong speedometer pinion.
- d. Brakes dragging.
- e. Detonation or pre-ignition.
- f. Driving at excessive speeds.
- g. Low tire pressure.
- h. Short trip or heavy traffic driving.
- i. Driving in snow or mud.
- j. Driving in high winds.
- k. Unnecessary use of accelerator.
- l. Sticky choke.
- m. Incorrect ignition timing.
- n. Incorrect distributor advance.
- o. High fuel level in carburetor.
- p. Stuck manifold heat control valve.
- q. Fouled spark plugs.
- r. Low engine compression.
- s. Worn camshaft lobes.
- t. Sticking valves.
- u. Elevation and atmospheric conditions.
- v. Restricted tail pipe or muffler causing exhaust back pressure.
- w. Incorrect valve timing.

12. CARBURETOR FLOODS OR LEAKS

Possible Causes:

- a. Cracked body.
- b. Defective body gaskets.
- c. High float or fuel level.

- d. Worn needle valve and seat.
- e. Leaking float.
- f. Excessive fuel pump pressure.

NOTE: Presence of fuel dye around carburetor gaskets does not necessarily denote a leak or a flooding condition. Tighten air horn attaching screws securely to correct.

13. POOR ACCELERATION

Possible Causes:

- a. Step-up piston stuck in down position (lean mixture at wide open throttle).
 - b. Accelerator pump piston (or plunger) leather too hard, worn or loose on stem.
 - c. Faulty acceleration pump discharge ball.
 - d. Accelerator pump inlet check ball faulty.
 - e. Incorrect fuel or float level.
 - f. Worn accelerator pump and throttle linkage.
 - g. Automatic choke not operating properly.
 - h. Carburetor gummed up.
 - i. Faulty coil.
 - j. Loose distributor base plate bearing.
 - k. Distributor not advancing properly.
 - l. Incorrect ignition timing.
 - m. Incorrect spark plug gap.
 - n. Fouled spark plugs.
 - o. Overheated spark plugs.
 - p. Manifold heat control valve stuck.
 - q. Low fuel pump pressure or vacuum.
 - r. Compression not up to specifications.
 - s. Low grade of fuel.
 - t. Detonation or pre-ignition.
 - u. Incorrect valve timing.
-

CARBURETOR MODELS

BBD-2923S OR BBD-2924S

14. SERVICING THE CARBURETOR

Dirt, dust, water and gummy deposits are some of the main causes for poor carburetor operation. Proper cleaning, however, and installation of new parts, where required, will return the carburetor to its originally designed performance.

When overhauling the carburetor, several items of importance should be observed to assure a good job. All parts should be carefully cleaned in a suitable solvent and inspected for damage and wear. Replace questionable parts with NEW ones.

Use air pressure only, to clear the various orifices and passages.

SERVICE PROCEDURES

15. CARBURETOR DISASSEMBLY (Fig. 3)

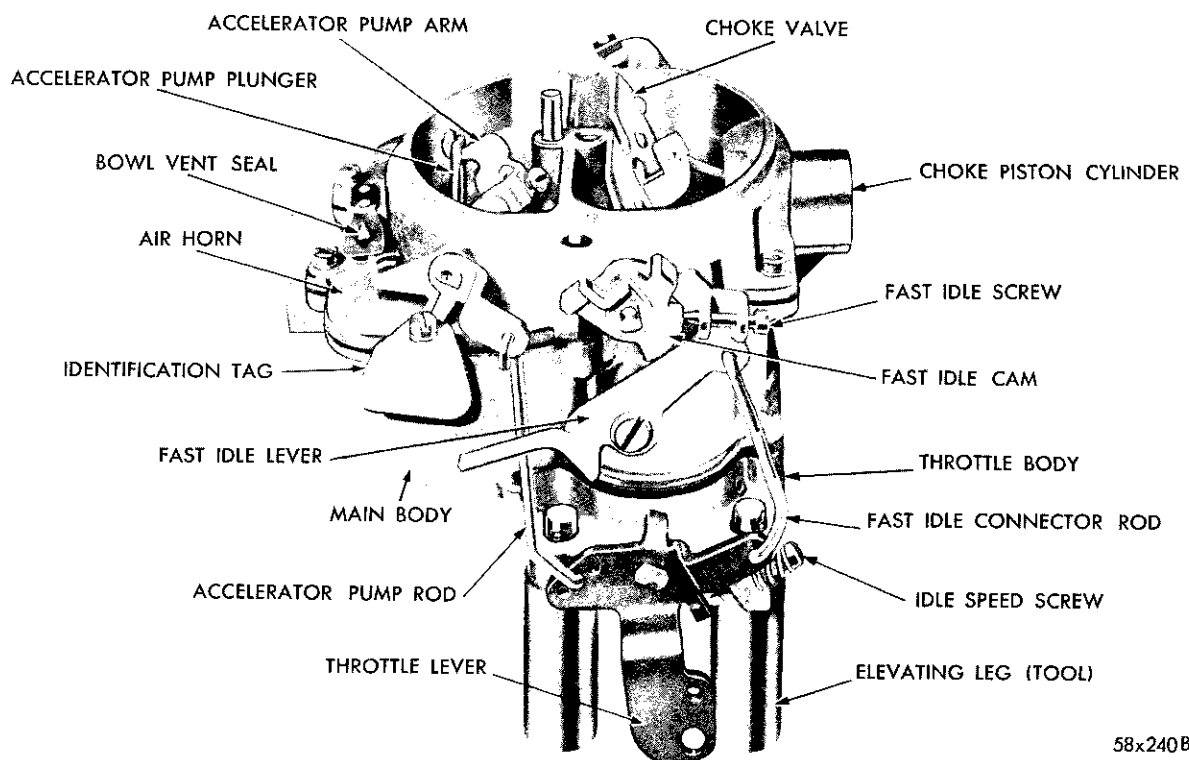
(1) Insert three Tool T109-287S and one Tool T109-288S elevating legs through the carburetor throttle body stud holes. (These tools are used to protect the throttle valves from damage and to provide a suitable base for working.)

(2) Remove the hairpin clip and disengage the

fast idle connector rod from the throttle and fast idle levers.

(3) Remove the hairpin clip and disengage the accelerator pump rod from the throttle lever and the pump rocker arm, as shown in Figure 4.

(4) Remove the air horn retaining screws and lift air horn straight up and away from the main body. Discard the gasket (2 screws recessed).



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Fig. 3—Carburetor Assembly BBD-2923S or BBD-2924S

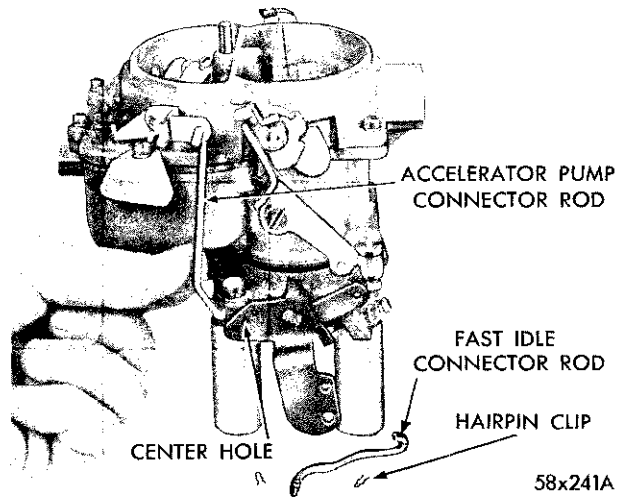


Fig. 4—Removing or Installing Fast Idle and Pump Rods

(5) Disengage the accelerator pump plunger from the accelerator pump arm by pushing up on bottom of plunger and sliding plunger shaft off hook, as shown in Figure 5. Slide plunger out of air horn and remove the compression spring and seat.

If the old plunger can be used again or if a new plunger is to be installed, place the plunger in a jar of clean gasoline or kerosene to prevent the leather from drying out.

(6) Remove the fuel inlet needle valve, seat and gasket from the main body.

(7) Lift out the float fulcrum pin retainer, and lift out the floats and fulcrum pin, as shown in Figure 6.

(8) Remove the step-up piston and retaining screw and slide the step-up piston and rods out of

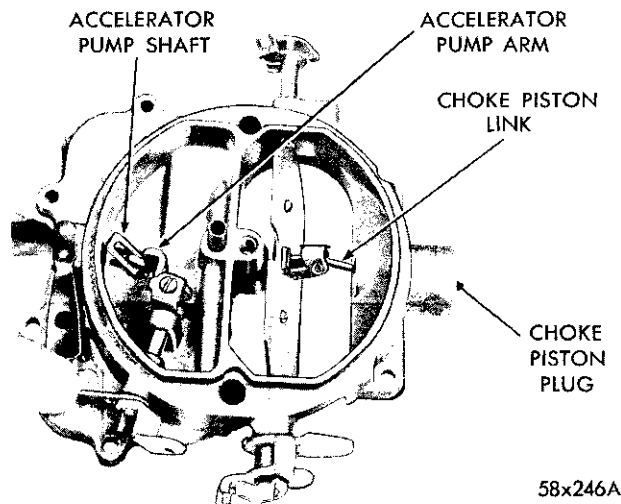


Fig. 5—Removing or Installing Accelerator Pump

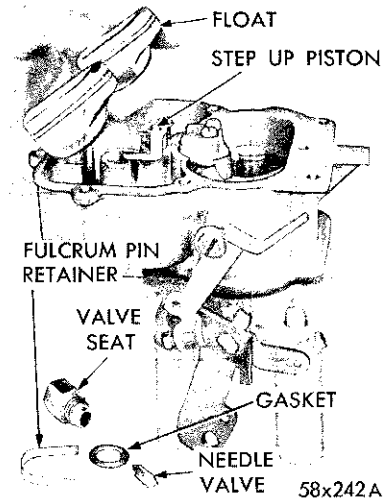


Fig. 6—Removing or Installing Float

well, as shown in Figure 7. Lift out the step-up piston spring. Remove the step-up piston gasket from the bottom of the well.

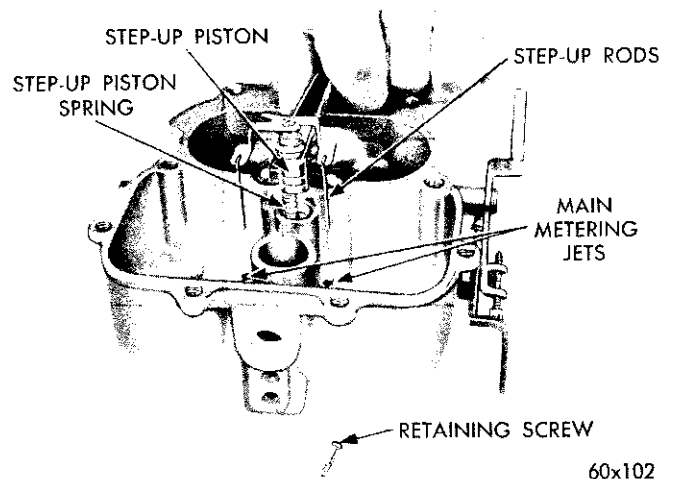


Fig. 7—Removing or Installing Step-Up Piston

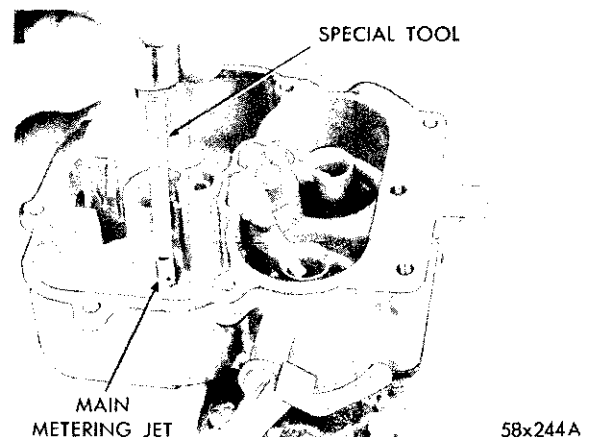


Fig. 8—Removing or Installing Main Metering Jets

(9) Remove the main metering jets and gaskets, as shown in Figure 8.

(10) Remove the venturi cluster idle bleed screws, then lift the venturi cluster and gaskets up and away from the main body, as shown in Figure 9. Discard the gaskets. **Do not remove the idle orifice tubes or the main vent tubes from the cluster.** They can be cleaned in a solvent and dried with compressed air.

(11) Invert the carburetor and drop out the accelerator pump discharge check ball.

(12) Remove the idle mixture adjusting screws and springs from the throttle body.

(13) Remove the screws that attach the throttle body to the main body. Separate the bodies and discard the gasket.

The carburetor now has been disassembled into three sub-assemblies, the air horn, main body and throttle body and the components of each disassembled as far as necessary for cleaning and inspection.

It is usually not advisable to remove the throttle shaft or valves from the throttle body, unless wear or damage necessitates the installation of new parts.

16. CLEANING CARBURETOR

The recommended solvent for gum deposits is denatured alcohol which is easily obtainable. There are other commercial solvents, however, which may be used with satisfactory results.

IMPORTANT

If the commercial solvent or cleaner recommends the use of water as a rinse, it should be "HOT." After rinsing, all trace of water must be blown from the passages with air pressure. It is further advisable to rinse all parts in clean kerosene or gasoline to be cer-

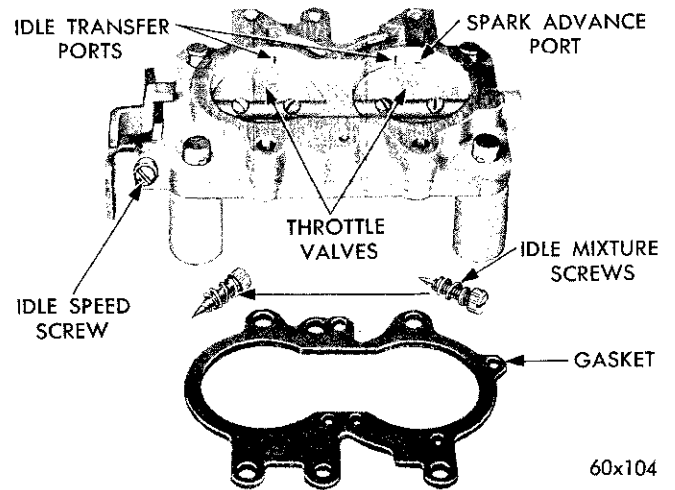


Fig. 10—Ports in Relation to Throttle Valves

tain no trace of moisture remains. Never clean jets with a wire, drill or other mechanical means, because the orifices may become enlarged, making the mixture too rich for proper performance.

17. INSPECTION AND REASSEMBLY

a. Throttle Body

(1) Inspect the throttle shaft and throttle body for excessive wear. If either or both are worn to the point where the carburetor operation will be affected, replace as required.

During manufacture, the location of the idle transfer port and the spark advance control ports to the throttle valve, is carefully established for one particular assembly (Fig. 10).

If a new shaft should be installed in an old, worn throttle body, it would be very unlikely that the original relationship of the ports to the valves would

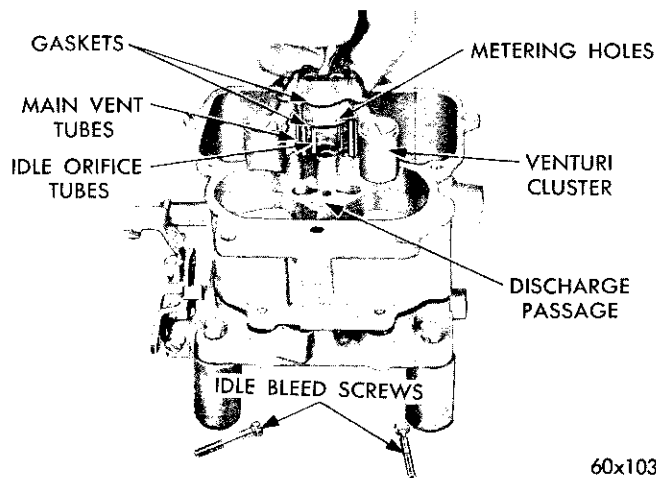


Fig. 9—Removing or Installing Venturi Cluster

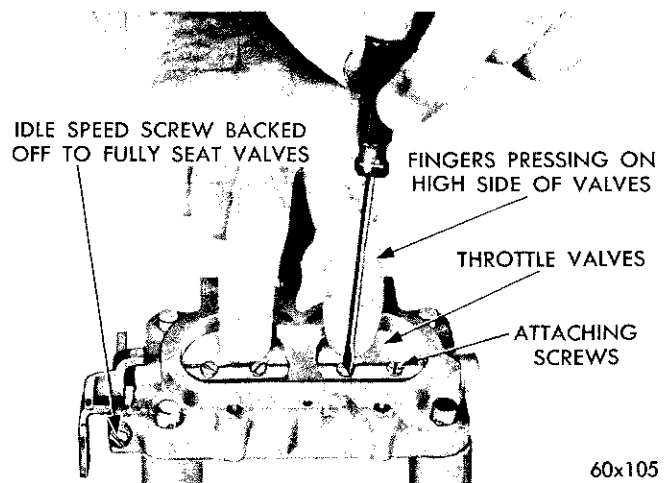


Fig. 11—Installing Throttle Valves

be obtained. Changing the relationship of the valves to the ports would adversely affect normal car operation between the speeds of 15 and 30 miles per hour. If it has been determined, however, that a new shaft or valves is to be installed, adhere to the following instructions.

(2) Mark the position of the throttle valves in the bores. Be sure the idle speed screw is backed off.

(3) Remove the screws that hold the throttle valves to the shaft and slide the valves out of the bores.

CAUTION

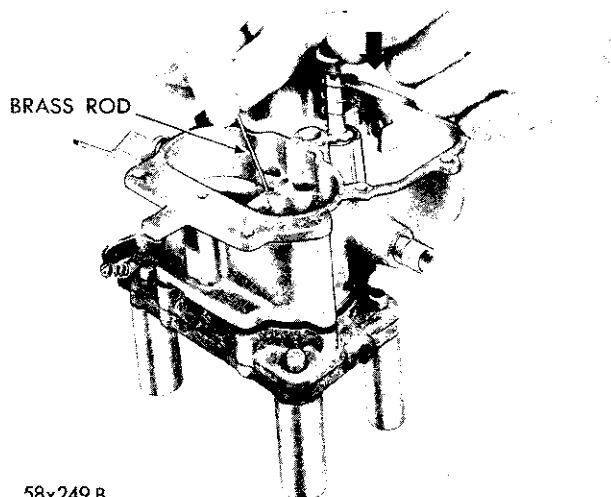
These screws are staked on the opposite side and care should be used at removal so as not to break off in the shaft.

(4) Slide the throttle shaft and lever out of the body.

(5) Install new throttle shaft and lever.

(6) Install throttle valves in their respective bores (with the valve numbers toward the manifold flange). Install new screws but do not tighten. Hold the valves in place, with the fingers pressing on the high sides of the valves, as shown in Figure 11. Tap the valves lightly with a screwdriver to seat in the throttle bores. Tighten the screws securely and stake by squeezing with pliers.

(7) Install the idle mixture screws and springs in the throttle body. (The tapered portion must be straight and smooth. If the tapered portion is grooved or ridged, new idle mixture screws should be installed to insure having correct idle mixture control.) **DO NOT USE A SCREWDRIVER.** Turn



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Fig. 12—Testing Accelerator Pump Intake and Discharge Check Balls

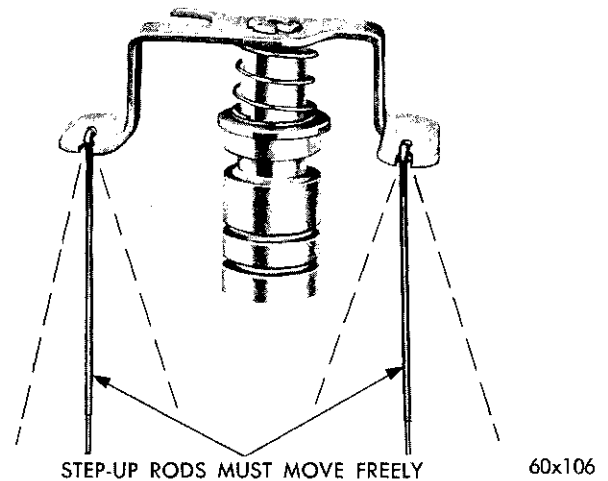


Fig. 13—Step-Up Rod Free Play

the screws **lightly** against their seats with the fingers. Back off one full turn for approximate adjustment.

b. Main Body

(1) Invert the main body and place a new gasket in position and place the throttle body on the main body and align. Install screws and tighten securely.

(2) Install the accelerator pump discharge check ball in the discharge passage and check the accelerator pump system; fuel inlet and discharge check balls as follows:

(3) Pour clean gasoline into the carburetor bowl, approximately $\frac{1}{2}$ inch deep. Remove the pump plunger from the jar of gasoline, flex the leather several times, then slide down into the pump cylinder. Raise the plunger and press lightly on the plunger shaft to expel all air from the pump passage.

(4) Using a small clean brass rod, hold the discharge check ball down firmly on its seat. Again raise the plunger and press downward. No fuel should be emitted from either the intake or discharge passage, as shown in Figure 12.

If any fuel does emit from either passage, it indicates the presence of dirt or a damaged check ball. Check the passage again and repeat test. If leakage is still evident, install a new check ball. The fuel inlet check ball is located at the bottom of the plunger well and should rattle freely when the carburetor is shaken.

(5) Install new gaskets on the venturi cluster, and install in position in the main body. (Refer to Fig. 9). Install the idle bleed screws and tighten securely. Test pump discharge by pressing pump plunger

down. Two fine streams of fuel should be forced from the cluster. If either stream is restricted or diverted, remove cluster and reclean. After test, pour the fuel from the bowl and remove pump plunger.

(6) Install the main metering jets and gaskets. Tighten securely. (Refer to Fig. 8).

(7) Before installing the step-up piston, be sure the step-up rods are able to move freely, each side of the vertical position, as shown in Figure 13. The step-up rods must be straight and smooth.

(8) Slide the step-up piston gasket down into position in the piston well, then install the step-up piston spring, step-up piston and rods. Carefully guide the step-up rods into the main metering jets. (Refer to Fig. 7). Install the retaining screw and tighten securely. Check piston for free operation in the well.

A step-up piston stuck in the Up position will cause a rich mixture at part throttle, whereas a piston stuck in the Down position will cause a lean mixture at wide open throttle and poor acceleration.

c. Checking Float Setting

(1) Install the floats and fulcrum pin.

(2) Assemble the fuel inlet needle valve, seat and gasket and insert in position in the main body. Tighten securely. (If the needle valve is ridged or badly worn, install a new needle valve and seat assembly.)

(3) Using Tool T109-239 or a "T" scale, check the float setting, as shown in Figure 14. There should be 9/32" from top of the crown of each float to top

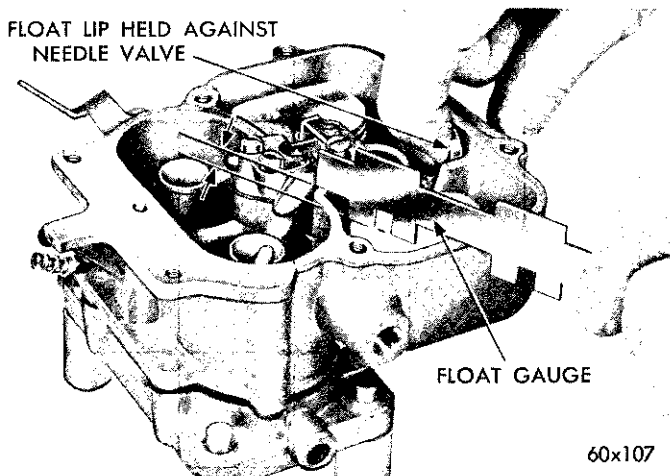


Fig. 14—Checking Float Setting

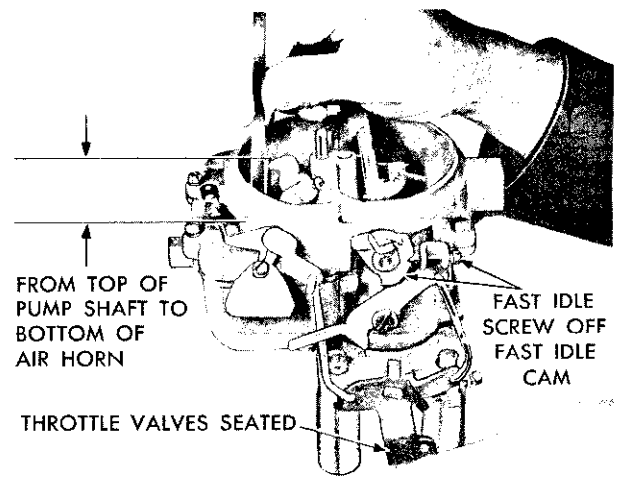


Fig. 15—Measuring Accelerator Pump Travel

of the main body. Each float must be adjusted to this setting and should not touch the sides of the bowl. Install float fulcrum pin retainer.

d. Air Horn

(1) Check the freedom of the choke mechanism in the air horn. The shaft and piston must float free to operate correctly. If the choke piston sticks in the cylinder, pierce the welsh plug and remove plug and piston. Clean thoroughly and reinstall piston. Install new plug.

(2) Remove accelerator pump plunger from gasoline, slide compression spring and spring seat over shaft. Install assembly in air horn and engage with accelerator pump arm. (Refer to Fig. 5).

(3) Place a new gasket on the main body, and install the air horn. Install attaching screws and tighten securely. (When installing air horn, be sure the leather on the plunger does not wrinkle or fold back.)

(4) Engage the accelerator pump rod with the pump rocker arm and install loose end in the center hole of throttle lever. (Refer to Fig. 4). Install hairpin clip to secure.

(5) Engage the fast idle connector rod in the fast idle lever and throttle lever. Install hairpin clip to secure. (Refer to Fig. 4.)

18. CARBURETOR ADJUSTMENTS

It is very important that the following adjustments are made on a reconditioned carburetor and in the sequence listed:

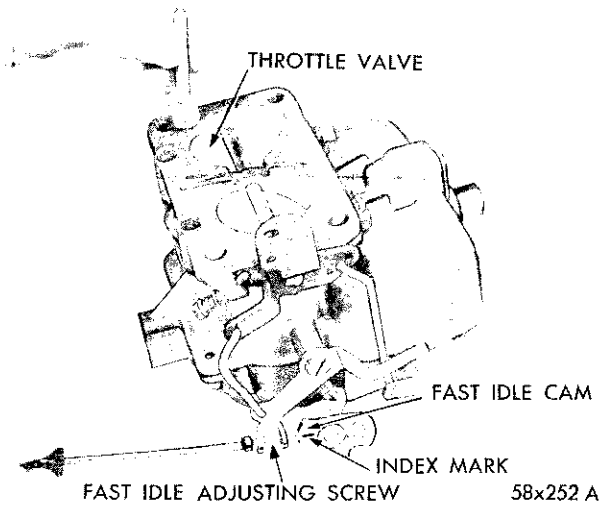


Fig. 16—Checking Fast Idle Setting

a. Accelerator Pump

(1) Back off the idle speed adjusting screw. Open the choke valve so that the throttle valves can be completely seated in the bores. Be sure that the pump connector rod is installed in the center hole of the throttle lever.

(2) Close the throttle valves tightly. Measure the distance between the top of the air horn and the end of plunger shaft, as shown in Figure 15. This measurement should be $1'' \pm$ or $- 1/64$ inch.

(3) To adjust pump travel, bend the pump connector rod, using Tool T109-213, at the lower angle of rod, until correct travel has been obtained.

b. Fast Idle Adjustment

(1) Open the throttle valves and hold the choke valve in the fully closed position. Close the throttle valves. This will position the fast idle cam to the fast idle position.

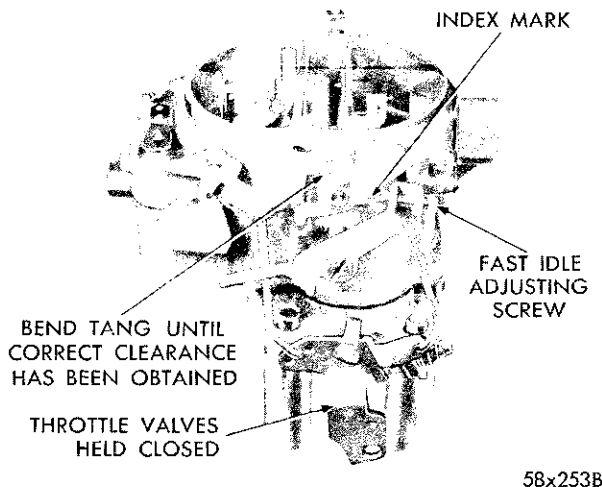


Fig. 17—Fast Idle Index Mark Aligned

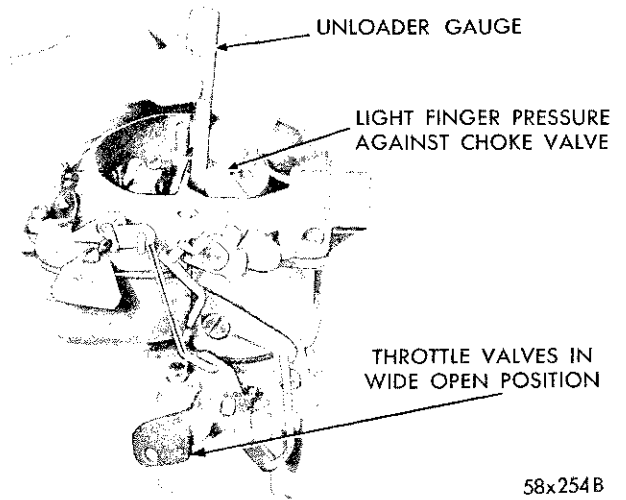


Fig. 18—Checking Choke Unloader Setting

(2) Hold in this position, and invert the carburetor. Slide wire gauge Tool T109-44 .015" between the throttle valves and the bore (side opposite ports). Tighten the fast idle adjusting screw until a slight drag is felt as gauge is being withdrawn, as shown in Figure 16.

(3) Again, invert the carburetor and open the valves to wide open position. Close the throttle valves and the choke valve tightly.

(4) Release the choke valve only. This again positions the fast idle cam to fast idle. The index mark on the cam should split the center of the fast idle screw shank, as shown in Figure 17.

If an adjustment is necessary, bend the tang on the choke shaft lever, using Tool T109-22 until the index mark on the cam indexes with the adjusting screw.

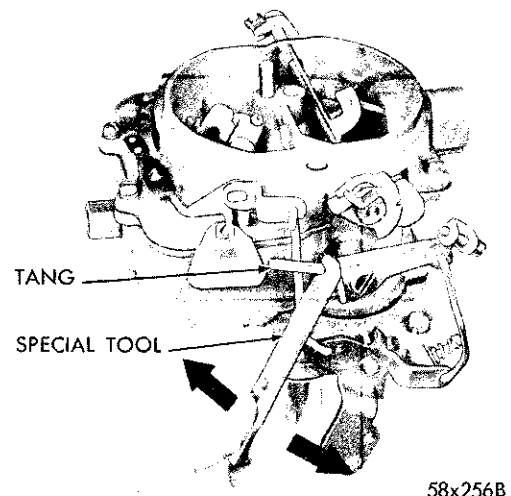


Fig. 19—Bending Fast Idle Lever Tang

c. Choke Unloader (wide open kick)

(1) Hold the throttle valves in the wide open position. Insert Tool T109-31 (or a 1/4" drill shank) between the upper edge of the choke valve and the inner wall of the air horn, as shown in Figure 18.

(2) With a finger lightly pressing against the valve, a slight drag should be felt as gauge is being withdrawn. If an adjustment is necessary, bend the tang on the fast idle lever, using Tool T109-22, as shown in Figure 19 until correct clearance has been obtained.

d. Bowl Vent Valve Adjustment

(1) With the throttle valves held closely, it should be possible to insert a .060" drill shank between the bowl vent valve and the air horn.

(2) If an adjustment is necessary, bend the short tang on the vent valve operating lever, using Tool T109-22 until correct clearance has been obtained.

e. Idle Speed Adjustment (curb idle)

The idle speed adjustment is made after the carburetor has been installed on the engine.

(1) With the throttle valves closed and the choke valve wide open (engine at normal operating temperature) adjust the idle speed screw to give 500 r.p.m. using a tachometer, (575 r.p.m. on air condition equipped cars).

(2) Adjust the idle mixture screws until the engine operates smoothly. Recheck the tachometer and again adjust the idle screw to give the correct engine r.p.m.

19. AUTOMATIC CHOKE—WELL TYPE

To function properly, it is important that all parts

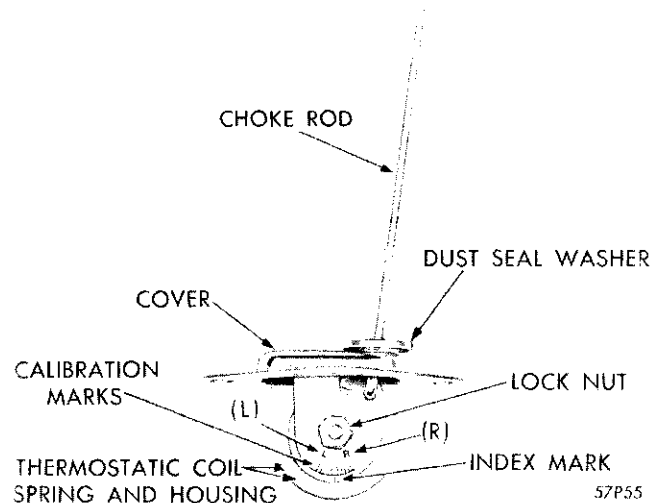


Fig. 20—Well Type Automatic Choke Unit

be clean and move freely. Other than an occasional cleaning, the choke requires no servicing. It is very important, however, that the choke control unit work freely in the well and at the choke shaft.

Move the choke rod up and down to check for free movement on the pivot. If the unit binds, a new choke unit should be installed. THE WELL TYPE CHOKE UNIT is serviced as an assembly. Do not attempt to repair or change the index setting. (See Fig. 20.)

When installing the well type choke unit, be certain that the coil housing does not contact the sides of the well in the intake manifold. Any contact at this point will affect choke operation.

Do not lubricate any parts of the choke or the control unit. This causes an accumulation of dirt which will result in binding of the choke mechanism.

AFB SERIES CARBURETOR DATA AND SPECIFICATIONS

CARBURETOR

Type	4 Barrel Downdraft		
Model (automatic transmission)	AFB-2927S, 2950S	AFB-2968S	AFB-2903S

THROTTLE BORE

Primary	1-7/16"	1-7/16"
Secondary	1-9/16"	1-11/16"

MAIN VENTURI

Primary	1-3/16"	1-3/16"
Secondary	1-5/16"	1-9/16"

LOW SPEED JET

Primary	No. 67-.032"	No. 67-.035"	No. 65-.035"
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ADJUSTMENTS

Accelerator Pump Setting (top of plunger to air horn)	7/16"	7/16"
Choke Unloader (wide open kick)	1/4"	1/4"
Fast Idle Adjustment020"	.010"
Fast Idle Speed (rpm)	1775-1825	***1475-1525
Idle Speed Adjustment (rpm)	500	**725-750
(with air conditioning) (rpm)	550*	*550
Secondary Throttle Lever Adjustment	19/64"	19/64"
Secondary Throttle Lock-Out Adjustment020"	.020"
Float Setting (gasket to top of floats)	7/32"	9/32"
Float Drop	3/4"	3/4"
Idle Mixture (both screws-turns open)	1-2	1-2
Automatic Choke Unit Setting	2 Notches Rich	1 Notch Rich

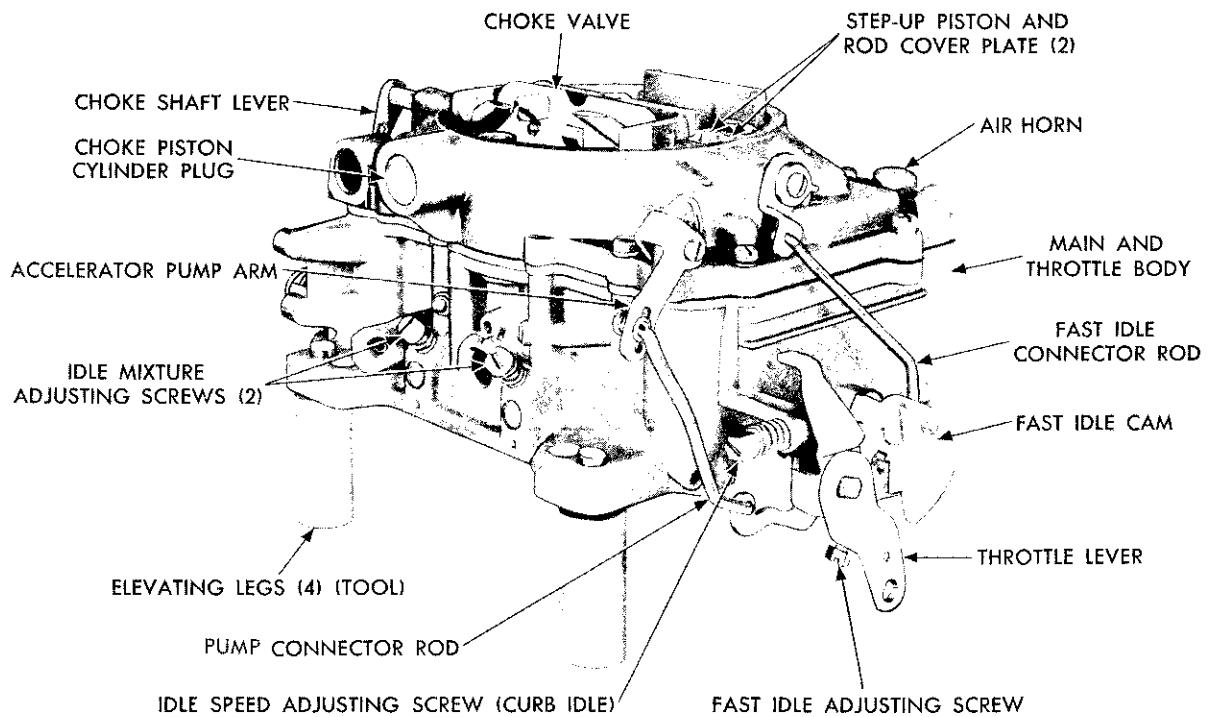
* 550 rpm with the transmission in "D" or "R" and the air conditioning compressor "on".

** 725 to 750 rpm and constant with the transmission in neutral (N) and the air conditioning compressor "on" (if so equipped).

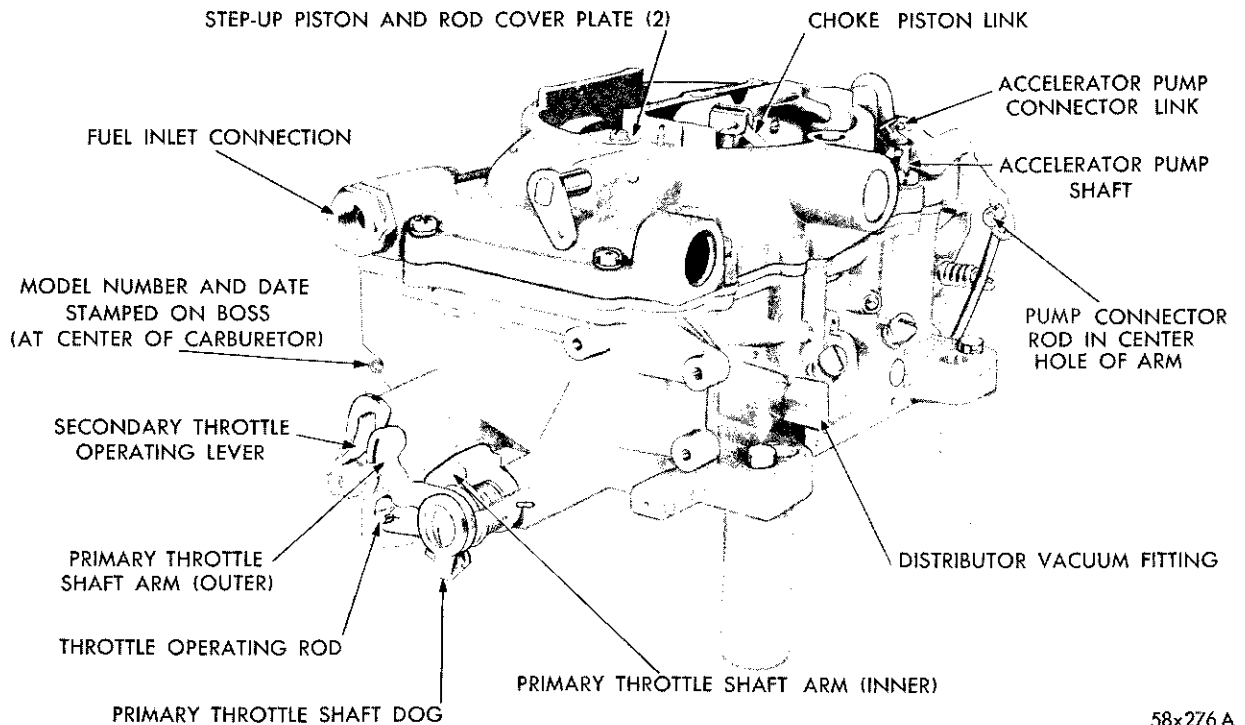
***On Ram Charge De Soto Adventurer and 1375-1425 on the Chrysler Model C300F.

SPECIAL TOOLS

C-3400.....	Repair Stand
T109-287S.....	Elevating Legs
T109-22.....	Bending Tool
T109-29.....	Wire Gauge (.020" and .030") (Fast Idle)
T109-31.....	Gauge 1/4" (Choke Unloader)
T109-41.....	Bending Tool (Fast Idle End Unloader)
T109-58.....	Screwdriver Bit
T109-59.....	Screwdriver Bit
T109-106.....	Float Gauge (7/32")
T109-126.....	Float Gauge (9/32")
T109-200.....	Wire Gauge (.010" and .012") (Fast Idle)
T109-213.....	Bending Tool



58x275 A



58x276 A

Fig. 21—Carburetor Assembly

AFB SERIES CARBURETOR

MODELS AFB-2927S, 2950S, 2968S, 2903S

The new AFB (aluminum four barrel) carburetor contains many new features, some of which are a new location for the step-up rods and pistons. The step-up rods, pistons and springs are accessible for service without removing the air horn, or the carburetor from the engine.

The venturi assemblies (primary and secondary) are replaceable and contain many of the calibration points for both the high and low speed system. One fuel bowl feeds both the primary and secondary nozzles on the right side while the other fuel bowl takes care of the primary and secondary nozzles on the left side. This provides improved performance in cornering, quick stops and acceleration.

All the major castings of the carburetor are aluminum, with the throttle body cast integral with the main body. This allows an overall height reduction in the carburetor. The section containing the accelerator pump is termed the primary side of the carburetor. The rear section is the secondary.

SERVICE PROCEDURES

21. DISASSEMBLING THE AFB CARBURETOR (Fig. 21)

(1) Place the carburetor assembly on repair stand Tool C-3400 or T-109-287S elevating legs.

(2) Remove the hairpin clip that attaches the fast idle connector rod to the choke lever. Disengage rod from lever, then swing rod at an arc until it can be disengaged from the fast idle cam.

(3) Remove the retainer and spring that holds the throttle connector rod in the center hole of the accelerator pump arm. Remove the hairpin clip that attaches the lower end of rod in the primary throttle shaft lever. Disengage rod from arm and lever, then remove from carburetor.

(4) Remove the screws attaching the step-up piston and rod cover plates.

NOTE: Hold cover down with a finger to prevent the piston and rods from flying out.

(5) Lift off the plates and slide the step-up pis-

tons and rods out of the air horn, as shown in Figure 22. Remove the step-up piston springs.

20. SERVICING THE CARBURETOR

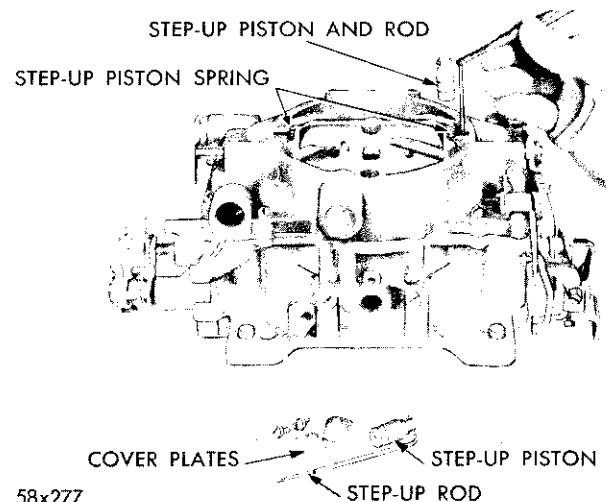
Dirt, dust, water and gummy deposits are some of the main causes for poor carburetor operation. However, proper cleaning and the installation of new parts, where required, will return the carburetor to its originally designed performance.

When overhauling the AFB carburetor, several items of importance should be observed to assure a good job.

The carburetor should be carefully disassembled and all parts should be cleaned in a suitable solvent and inspected for wear or damage.

Air pressure only should be used to clean the various orifices and channels. Replace questionable parts with new ones.

(6) Remove the ten screws that attach the air



**Fig. 22—Removing or Installing Step-Up
Pistons and Rods**

horn to the main body (1 screw in hole in air horn). Lift air horn straight up and away from the main body.

NOTE: When removing air horn, use care so as not to bend or damage the floats.

(7) Remove the accelerator pump plunger lower spring from the pump cylinder.

a. Disassembling the Air Horn

Place the air horn in an inverted position on the bench (to protect the floats).

(1) Using a suitable tool, remove the float fulcrum pins (left and right) and lift the floats up and out of bosses on air horn.

NOTE: It is suggested that the float on the pump side be marked so that the floats can be re-installed in their respective positions.

(2) Remove the two needle valves from their respective seats, after marking the one on the pump side for identification. Using a wide blade screwdriver, remove the needle valve seats. Be sure each needle valve is returned to its original seat at re-assembly.

(3) Remove the hairpin clip that holds the accelerator pump connector link in the pump arm and plunger shaft. Disengage link from pump arm and shaft. Slide the accelerator pump plunger and spring out of the air horn. Remove the air horn to main body gasket and discard.

(4) Place the accelerator pump plunger in a jar of clean gasoline or kerosene, to prevent the leather from drying out.

(5) Remove the fuel inlet fitting and filter screen from the air horn.

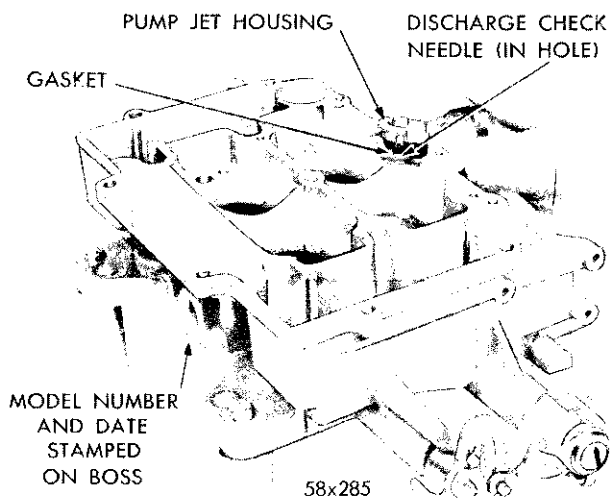


Fig. 23—Removing or Installing Accelerator Pump Jet Housing

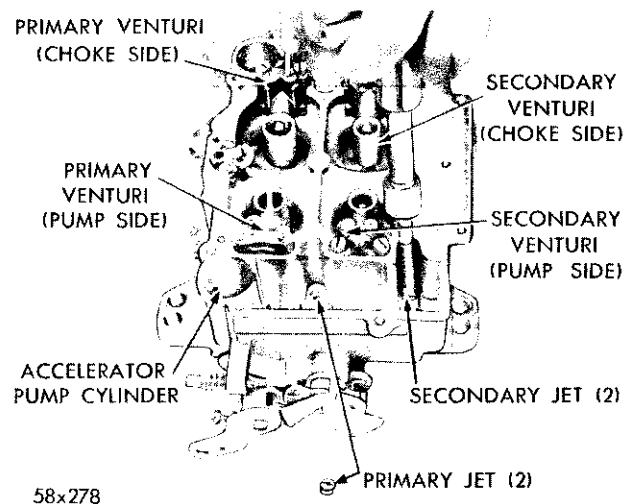


Fig. 24—Removing or Installing Main Metering Jets

(6) Using a prick punch, pierce the welch plug and remove it from the end of choke piston cylinder. Remove cotter pin that attaches the piston link to the choke valve lever. Slide choke piston and link out of cylinder.

b. Main Body Disassembly

(1) Remove the screws that attach the accelerator pump jet housing to the main body. Lift out the jet housing and gasket, as shown in Figure 23. Discard the gasket. Invert the main body and drop out the discharge check needle from the discharge passage.

(2) Using Tool T109-58, remove the main metering jets (primary side), as shown in Figure 24.

NOTE: The primary and secondary main metering jets are not interchangeable. It is very important that these jets be installed in their respective locations in the main body at reassembly.

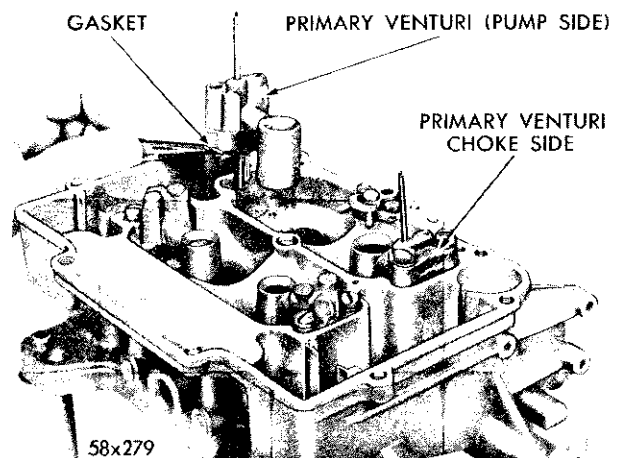


Fig. 25—Removing or Installing Primary Venturi

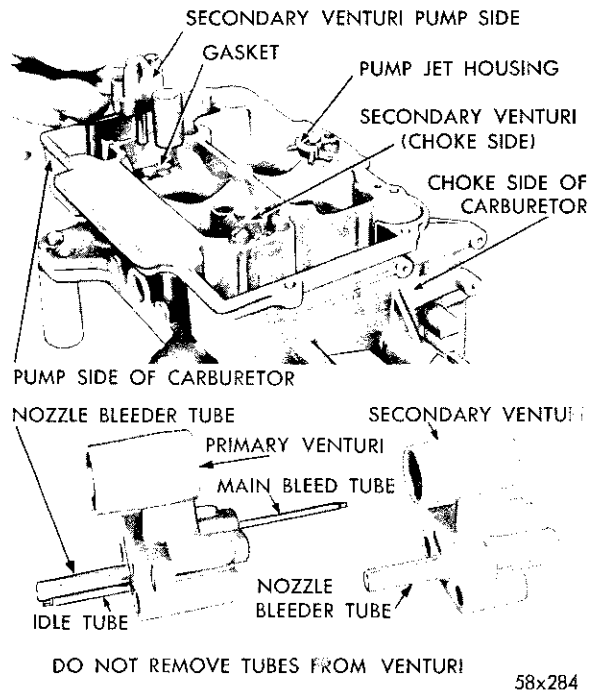


Fig. 26—Removing or Installing Secondary Venturi

(3) Again using Tool T109-58, remove the main metering jets (secondary side), as shown in Figure 24.

(4) Remove the screws that attach the primary venturi (choke and pump side) to the main body. Lift the venturi straight up and away from the main body, as shown in Figure 25. Discard the gaskets.

NOTE: The venturi assemblies are not interchangeable, side for side and must be re-installed in their original location at reassembly.

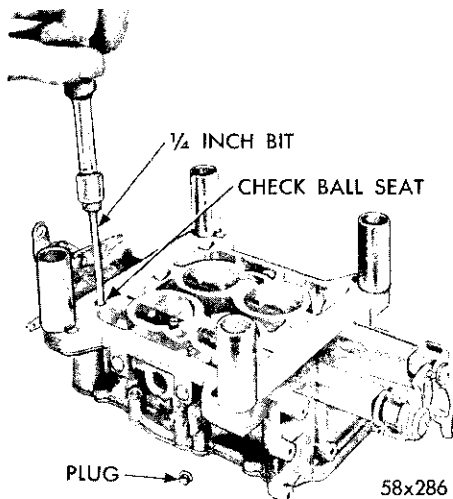


Fig. 27—Removing or Installing Accelerator Pump Intake Check Ball Seat

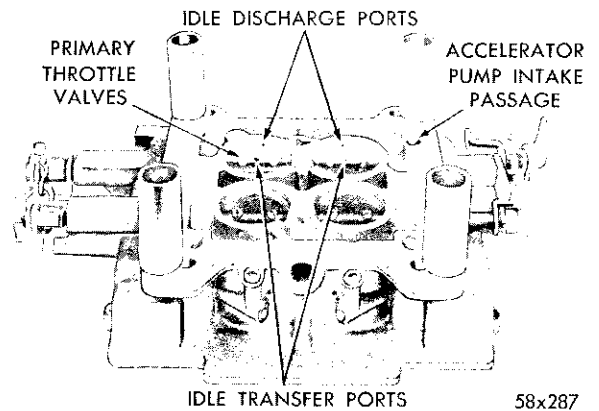


Fig. 28—Ports in Relation to Throttle Valves

(5) Remove the screws that attach the secondary venturi (choke and pump side) to the main body. Lift the secondary venturi assemblies straight up and away from the body, as shown in Figure 26.

(6) Invert the main and throttle body casting, and remove the accelerator pump intake check ball plug. Using Tool T109-59, screwdriver bit, remove the check ball seat, as shown in Figure 27. Again invert the body casting and drop out the intake check ball.

(7) Remove the two idle mixture adjusting screws and springs from the throttle body portion of the main casting.

The carburetor now has been disassembled into two units, the air horn and main and throttle body casting. The component parts of each have been disassembled as far as necessary for cleaning and inspection.

It is usually not advisable to remove the throttle shafts or valves, unless wear or damage necessitates the installation of new parts. During the manufacture of the carburetor, the location of the idle transfer ports and the idle discharge ports to the valve is carefully established for one particular assembly, as shown in Figure 28. The valves are milled to give the proper port relation.

If new throttle shafts should be installed in an old, worn body, it would be very unlikely that the original relationship of these ports to the valves would be obtained. A very slight change in the port relationship to the valves would adversely affect normal carburetor operation, between the speeds of 15 and 30 miles per hour.

It is recommended that if the throttle shafts are excessively worn, that a new carburetor be installed.

If the throttle valves, however, have become nicked, burred or damaged, new valves may be installed, providing the following instructions are carefully followed.

NOTE: The screws that attach the throttle valves are staked on the opposite side and care should be used in removal so as not to break the screws in the throttle shaft. Remove the staked portion of the screws with a file.

Remove the screws that attach the primary throttle valves to the throttle shaft and slide valve (or valves) out of the bores.

Remove the screws that attach the secondary throttle valves to the throttle shaft and slide valve (or valves) out of bores.

The primary valves and secondary valves are not interchangeable and should be kept separate in order that each may be returned to its respective bore. (See Fig. 29.)

c. Cleaning and Inspection

The recommended solvent for gum deposits is denatured alcohol. There are other other commercial solvents, however, which may be used with satisfactory results.

IMPORTANT

If the commercial solvent or cleaner recommends the use of a water rinse, it should be "HOT." After rinsing, all trace of water must be blown from the passages with air pressure. It is further advisable to rinse all parts in clean kerosene or gasoline to be certain no trace of moisture remains. Never clean jets with a wire, drill, or other mechanical means, because the orifices may become enlarged, making the mixture too rich for proper performance.

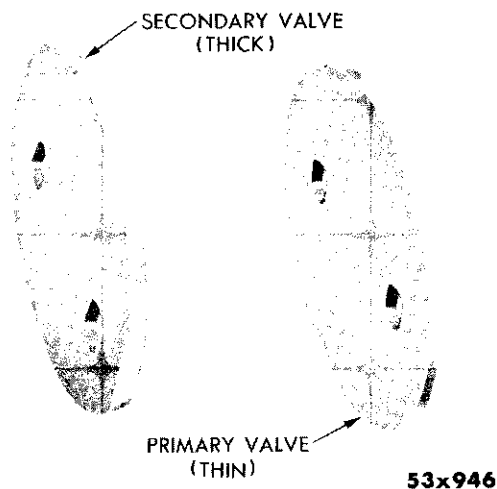


Fig. 29—Throttle Valve Identification

22. CARBURETOR ASSEMBLY

a. Main and Throttle Body Casting

(1) Slide the primary throttle valve (or valves) into their respective bores, install new screws, but do not tighten. Be sure the idle speed adjusting screw is backed out. Hold the valves in place with fingers (fingers pressing on the high side of the valves).

(2) Tap the valves lightly with a screwdriver to seat in the bores. Holding the valves in this position, tighten the screws securely. Stake screws by squeezing with pliers.

(3) Install the two idle mixture adjusting screws and springs in the throttle body portion of the casting. The tapered portion must be smooth and straight. If the tapered portion is grooved or ridged, a new idle mixture adjusting screw should be installed to insure having correct idle mixture control.

NOTE: Do not use a screwdriver.

The adjustment should be made with the fingers. Turn the idle mixture adjusting screws lightly against their seats and back off one full turn for an approximate adjustment.

(4) Place new secondary venturi gaskets in position, install the secondary venturi (pump and choke side) by lowering straight down on gaskets. Install attaching screws and tighten securely.

NOTE: Be sure all the metering holes and vent tubes are clean, in both the primary and secondary venturi.

(5) Place new primary venturi gaskets in position, then install the primary venturi (pump and choke side) by lowering straight down on the gaskets. (See Fig. 25). Install attaching screws and tighten securely.

(6) Install the primary and secondary main metering jets, using Tool T109-58. (See Fig. 24.) Tighten jets securely.

(7) Invert the carburetor and install the accelerator pump intake check ball. Install seat and tighten securely, using Tool T109-59 (Fig. 27). Install screw plug and tighten securely.

b. Accelerator Pump Test

(1) Pour clean gasoline into the carburetor bowl (approximately 1/2 inch deep). Remove the accelerator pump plunger from the jar of gasoline. Flex the leather several times, then slide onto the pump cylinder.

(2) Install the accelerator pump discharge check

needle in the discharge passage. Raise the pump plunger and press lightly on the plunger shaft to expel air from the pump passages. Using a small clean brass rod, hold the discharge check needle firmly on its seat. Again raise the plunger and press downward. No fuel should be emitted from either the intake or discharge passage.

(3) If fuel does emit from the intake passage, disassemble the intake check ball and reclean the passage. Fuel leakage at the discharge check needle indicates the presence of dirt or a damaged check needle. Clean again and then install a new check needle. Retest for leakage.

(4) If either the intake check ball or discharge check needle leaks after above test and service fix, attempt to reseat as follows:

c. Intake Check Ball

Remove the screw plug, gasket, ball seat and ball from the bottom of the throttle body flange. Install a new ball and ball seat. Install screw plug and new gasket and retest as described previously.

d. Discharge Check Needle

(1) With the discharge check needle installed, insert a piece of drill rod down on the needle. Lightly tap the drill rod with a hammer to form a new seat. Remove and discard old needle and install a new one. Retest as described previously. If the service fix does not correct the condition, a new carburetor must be installed.

(2) Install the accelerator pump discharge check needle, jet housing and gasket. Install housing and attaching screws. Tighten screws securely.

(3) Press down on the accelerator pump plunger

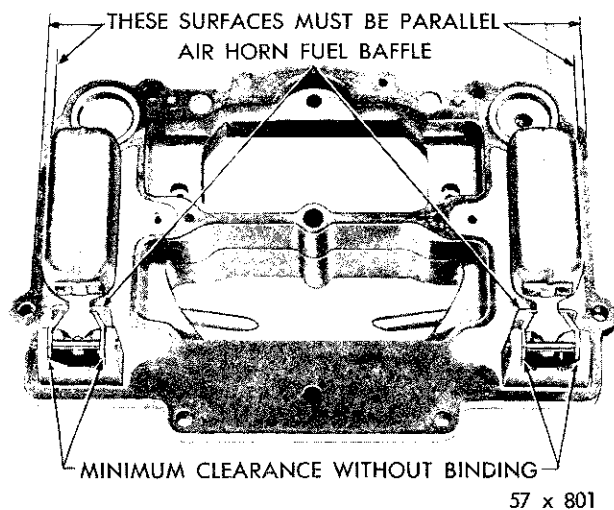


Fig. 30—Checking Float Alignment

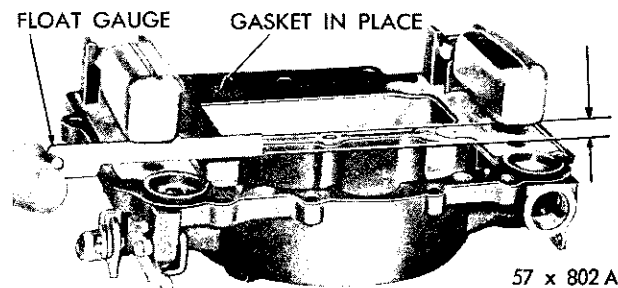


Fig. 31—Checking Float Height

shaft and as the plunger is being depressed, a clear straight stream should emit from each jet. If the streams are identical (if either one is diverted or restricted) a new accelerator pump jet housing should be installed. After test, pour the gasoline from the carburetor bowl and remove pump plunger.

e. Air Horn Assembly

(1) Slide the fuel inlet screen into the fuel line fitting, then install fitting in air horn. Tighten securely.

(2) Check to see if the leather on the accelerator pump plunger is hard, cracked or worn. If any sign of wear or deterioration is evident, install a new plunger assembly.

(3) Slide the accelerator plunger into air horn, and install the accelerator pump link. Install the retaining hairpin clip to secure.

(4) Place a new air horn to main body gasket in position on the air horn and install the float needle valve seats. (Be sure each needle seat and needle is reinstalled in its original position.)

(5) Slide the right and left floats into position in the air horn and install the float fulcrum pins.

NOTE: Be sure the marked float is installed on the pump side of the air horn.

(6) After the floats have been installed, check the float alignment, level and drop settings as follows:

f. Float Alignment Setting

(1) Sight down the side of each float shell to determine if the side of the float is parallel to the outer edge of the air horn casting, as shown in Figure 30.

(2) If the sides of the float are not in alignment with the edge of casting, bend the float lever by applying pressure to the end of the float shell with the fingers while supporting the float lever with the thumb.

NOTE: To avoid damage to the float, apply only enough pressure to bend the float lever.

(3) After aligning the floats, remove as much clearance as possible between the arms of the float lever and the lugs on the air horn. To do this, bend the float lever. The arms of the float lever should be parallel as possible to the inner surfaces of the lugs or the casting.

g. Float Level Setting

(1) With the air horn inverted, the air horn gasket in place and the float needle seated, slide float gauge Tool T109-106 (7/32") between the top of the float (at outer end) and the air horn gasket, as shown in Figure 31. Float should just touch gauge.

(2) Check the other float in the same manner. If an adjustment is necessary, bend the float arm using Tool T109-22, until correct clearance has been obtained. After bending arm, recheck the float alignment.

h. Float Drop Setting

(1) Holding the air horn in an upright position, measure the distance from the top of the floats (outer end) to the air horn gasket, as shown in Figure 32. This measurement should be 3/4 inch. If an adjustment is necessary, bend the stop tabs on the float levers until the correct drop setting has been obtained. Bend the tab towards the needle seat to lessen the drop, or away from the seat to increase the drop.

(2) After the floats have been checked and adjusted, continue to assemble the carburetor as follows:

(3) Place the accelerator pump plunger lower spring in the pump cylinder, then lower the air horn carefully down on the main body.

CAUTION

Be sure the fuel baffles on the air horn, slide down in front (bowl side) of the float chamber baffles, or the air horn will not index correctly with the main body and can cause the floats to hang up. Be sure the leather on the plunger does not curl or wrinkle. Accelerator pump operation will be affected if this precaution is not observed.

(4) Install the (10) air horn attaching screws and tighten securely. (The two long screws should be installed in the holes that are located at the air cleaner mounting surface. The 1 inch screw at the front and the 1 1/2 inch at the rear.)

(5) Slide the step-up piston springs into the piston

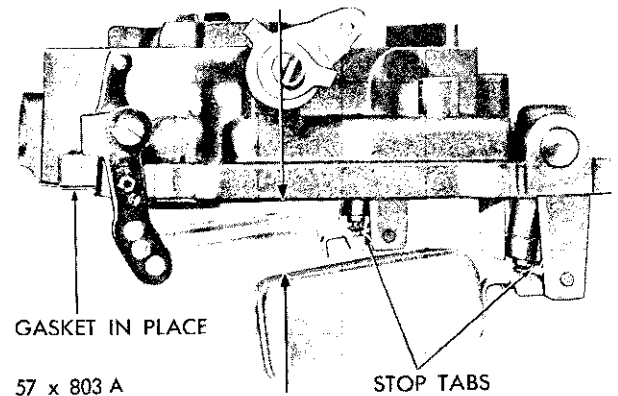


Fig. 32—Checking Float Drop

cylinders, followed by the step-up pistons and step-up rods. Install the cover plates and attaching screws while holding the step-up pistons down in position. Tighten screws securely.

(6) Slide the choke piston into its cylinder in the air horn, guiding the link into the slot in the choke valve lever. Align hole, then install attaching cotter pin. Place a new welsh plug over cylinder opening and secure by rapping with a hammer. Check the fit of the choke valve in air horn. The valve should be evenly spaced on all sides. Loosen screws and reposition if necessary.

(7) Engage the throttle connector rod with the primary throttle shaft lever and install hairpin clip. Slide the flat washer over the other end of rod and engage with the accelerator pump arm. Install retainer spring and retainer securely.

(8) Engage the lower end of the fast idle connector rod with the fast idle cam, then swing in an arc to lock in cam. Slide other end of rod into the choke shaft lever and secure with hairpin clip.

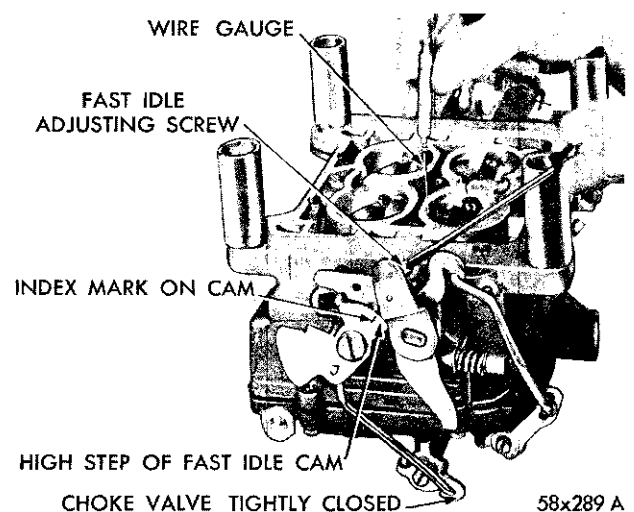


Fig. 33—Checking Fast Idle Adjustment

23. CARBURETOR ADJUSTMENTS

The following adjustments should be made with the carburetor on the bench for ease of working, and should be made in the following order:

a. Fast Idle Adjustment

(1) With the choke valve held tightly closed and carburetor inverted, tighten the fast idle adjusting screw (on the high step of the fast idle cam) until wire gauge Tool T109-29 (.020 inch) can be inserted between the primary throttle valve and the bore (side opposite idle port), as shown in Figure 33. The index mark on the fast idle cam should be in direct line with the fast idle screw shank.

(2) Invert the carburetor and open the throttle valves to wide open position. Close the choke valve tightly and then close the throttle valves. Release the choke valve. This will position the fast idle cam to fast idle. The index mark on the cam should split the center of the fast idle adjusting screw, as shown in Figure 34.

(3) If an adjustment is necessary, bend the fast idle connector rod at the angle, using Tool T109-213, until the index mark on the cam indexes the fast idle adjusting screw.

b. Choke Unloader Adjustment

(1) With the throttle valves in the wide open position, it should be possible to insert Tool T109-31 (1/4 inch) gauge between the upper edge of the choke valve and the inner wall of the air horn, as shown in Figure 35.

(2) If an adjustment is necessary, bend the unloader lip on the throttle shaft lever, using Tool T109-41, until correct opening has been obtained.

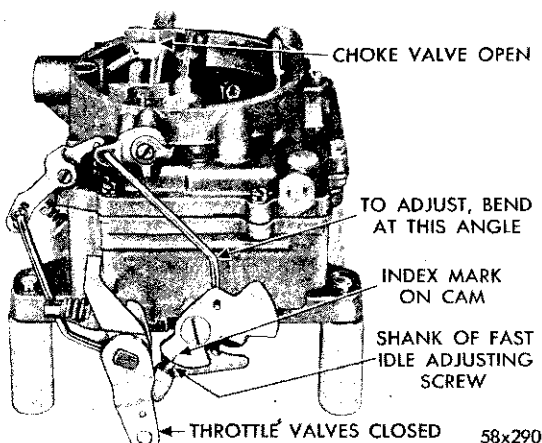


Fig. 34—Fast Idle Cam Indexing

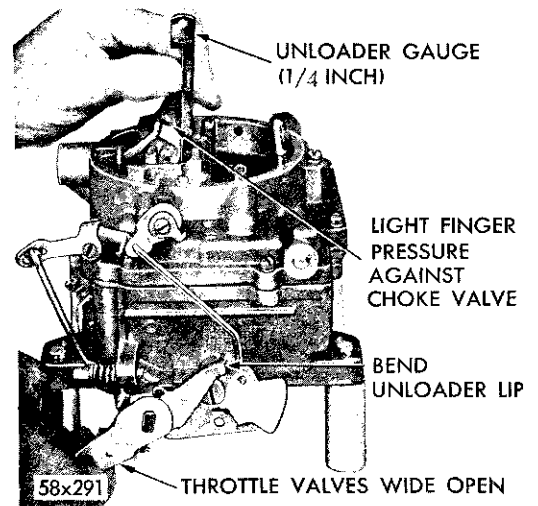


Fig. 35—Checking Choke Unloader (wide open kick) Adjustment

c. Accelerator Pump Adjustment

(1) Move the choke valve to wide open position, to release the fast idle cam. Back off the idle speed adjusting screw (curb idle) until the throttle valves are seated in the bores.

(2) Measure the distance from the top of the air horn to the top of the plunger shaft, using a "T" scale, as shown in Figure 36. This distance should be 7/16 inch on AFB 29035.

(3) If an adjustment is necessary, bend the throttle connector rod at the lower angle, using Tool T109-213, until correct travel has been obtained.

d. Secondary Throttle Lever Adjustment

(1) To check the secondary throttle lever adjustment, block the choke valve in the wide open position and invert the carburetor.

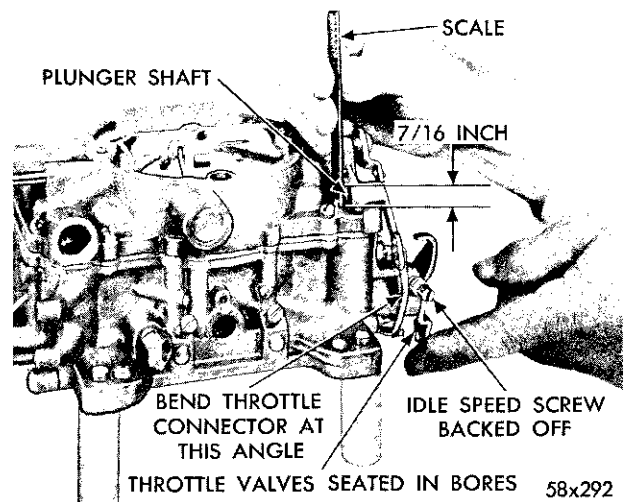


Fig. 36—Checking Accelerator Pump Travel

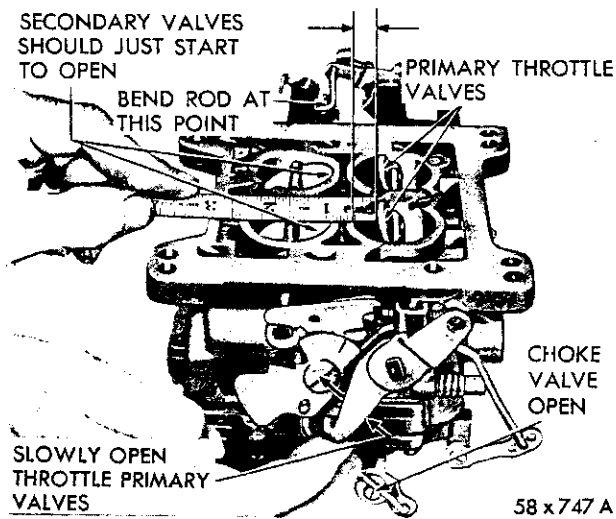


Fig. 37—Checking Secondary Throttle Opening

(2) Slowly open the primary throttle valves until it is possible to measure $19/64$ inch between the lower edge of the primary valve and the bore (opposite idle port) as shown in Figure 37. At this measurement, the secondary valves should just start to open.

(3) The stop lugs on both the primary and secondary throttle levers should contact the bosses on the flange at the same time.

(4) If an adjustment is necessary, bend the secondary throttle operating rod at the angle, using Tool T109-213, until correct adjustment has been obtained.

(5) At wide open throttle, the primary and secondary throttle valves should reach the full vertical position.

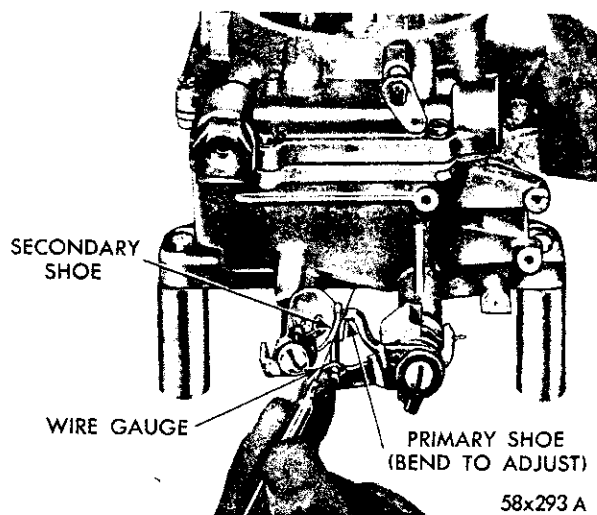


Fig. 38—Checking Clearance Between Closing Shoes

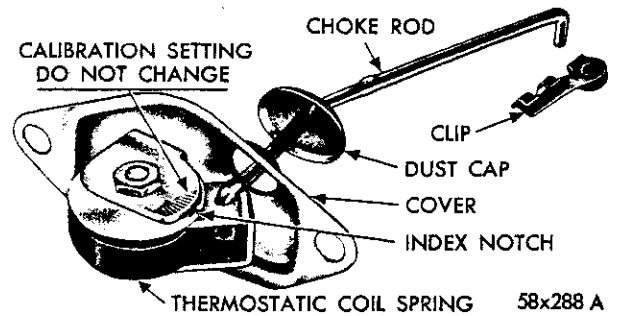


Fig. 39—Cross-Over Choke Control Unit

(6) With the primary and secondary throttle valves in the tightly closed position, it should be possible to insert Tool T109-29 (.020 inch) wire gauge, between the positive closing shoes on the secondary throttle levers, as shown in Figure 38.

(7) If an adjustment is necessary, bend the shoe on the secondary throttle lever, using Tool T109-22, until correct clearance has been obtained.

e. Secondary Throttle Lock-Out Adjustment

(1) Crack the throttle valves, then manually open and close the choke valve. The tang on the secondary throttle lever should freely engage in the notch of the lock-out dog.

(2) If an adjustment is necessary, bend the tang on the secondary throttle lever, until engagement has been made. Use Tool T109-22 for this operation.

(3) After adjustments have been made, reinstall carburetor on engine, using a new gasket.

(4) It is suggested that the carburetor bowl be filled with clean gasoline. This will help prevent dirt that is trapped in the fuel system from being dislodged by the free flow of fuel, as the carburetor is primed.

24. AUTOMATIC CHOKE (Well Type)

To function properly, it is important that all parts be clean and move freely. Other than the occasional cleaning, the automatic choke control requires no servicing. It is very important, however, that the choke control unit works freely at the thermostatic coil spring housing and at the choke shaft. Move the choke rod up and down to check for free movement of the coil housing on the pivot. If unit binds, a new unit should be installed. The Well Type Choke Control Unit is serviced only as a complete unit. Do not attempt to repair. (See Fig. 39.)

Do not lubricate any parts of the choke or control unit since this causes dirt accumulation which

would result in binding of the choke mechanism.

Do not attempt to change the calibration setting. (Refer to specifications.) This is pre-determined and should it be changed, improper choke action would result.

Clean all choke parts using a suitable solvent and then blow dry with compressed air. Examine all choke parts for wear or damage. Worn or damaged parts must be replaced with new in order to insure proper choke operation.

When installing the well type choke unit, make certain that the coil housing does not contact the sides of the wall in the intake manifold. Any contact at this point will affect choke operation.

25. IDLE SPEED ADJUSTMENT (Curb Idle)

The idle speed adjustment is made after the carburetor has been installed on the engine.

(1) With the throttle valves closed and the choke valve wide open (engine at normal operating temperature), adjust the idle screw at 500 rpm (725-750 rpm on AFB 2903S Ram Manifold Carburetors) using a tachometer (550 rpm on air conditioner equipped cars).

(2) Adjust the idle mixture screws until the engine operates smoothly, then recheck the tachometer and again adjust the idle screw to give the correct engine rpm.

FUEL TANK

DATA AND SPECIFICATIONS

FUEL TANK

Location	Conventional—Under Trunk Compartment Town and Country—Left Rear Quarter Panel
Capacity (Gallons) (All De Soto, Chrysler and Imperial Models except Town and Country)	23
Town and Country Models	22
Filler Cap	Non Vented

SPECIAL TOOLS

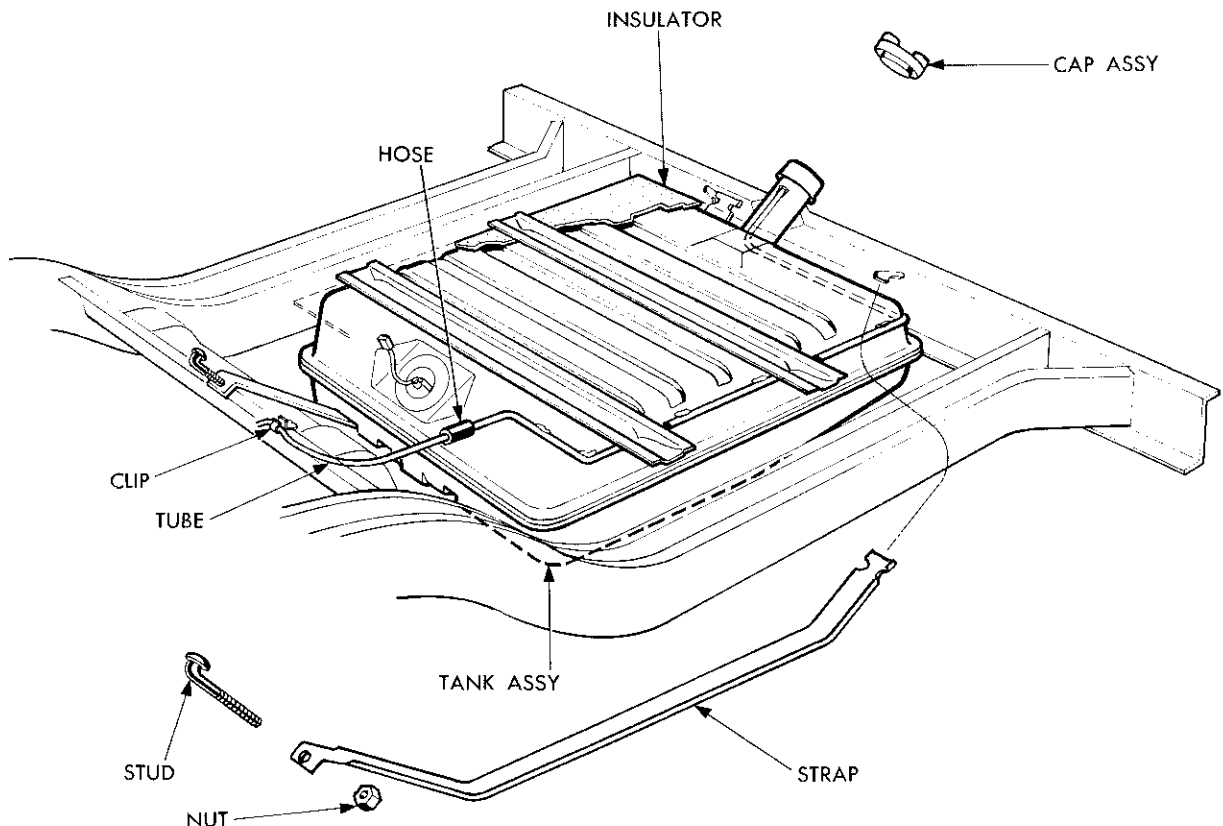
- C-3582—Spanner Wrench (Fuel Gauge)
 - C-3584—Filler Tube Remover (Town and Country and Imperial)
-

FUEL TANK

The fuel tank on all models except the Town and Country Models is located at the rear of the body, under the trunk compartment floor, as shown in Figure 40. In the Town and Country models, the fuel tank is mounted in the left rear quarter panel beyond the wheel house, as shown in Figure 41.

If the vehicle is to be stored for any appreciable length of time, the gasoline should be drained from the entire system, in order to prevent gum formation. If the vehicle has been undercoated, be sure the fuel tank vent tube (under kickup in floor pan) is open. If this is not done, a collapsed fuel tank will result.

The fuel tank on all models except the Town and Country has a 23 gallon capacity. The Town and Country capacity is 22 gallons. The filler tube on the conventional models is accessible through the center of the deck opening lower panel, while the Town and Country fills at the left rear upper quarter panel between the quarter post and the fin. The fuel tank is fitted with a gauge unit, including the suction pipe, as shown in Figure 42. The filter on the end of the suction pipe is a replaceable unit and prevents the entry of water or dirt. When installing a tank unit, be sure the filter is pushed on the end of the tube until seated.



60x96

Fig. 40—Fuel Tank Mounting

SERVICE PROCEDURES

26. FUEL TANK (Fig. 40) ALL DESOTO AND CHRYSLER MODELS (Except Town and Country and Imperial)

a. Removal

(1) Drain the tank, disconnect the fuel line and the wire lead to the gauge unit.

(2) Disconnect vent tube at hose connection at leading edge of tank.

(3) Remove the nuts that hold the ends of the fuel tank hold down straps to the frame. Lower front end of tank far enough to disengage filler tube from rear panel and slide out from under car.

(4) Remove the tank gauge unit, using spanner wrench Tool C-3582. Check the rubber grommet around the filler tube. If cracked or deteriorated, install a new grommet at reassembly.

b. Installation

Before installing the tank gauge unit, check the condition of the filter on the end of suction tube. If filter is corroded, install a new filter.

(1) Position fuel tank gauge unit in tank, using a new gasket. Tighten securely, using Tool C-3582.

(2) Slide the fuel tank under car. Raise the tank far enough to engage the filler spout with the opening in the rear panel.

(3) Push the tank toward the rear to fully engage the filler spout in the opening.

(4) Hold the fuel tank in this position, and place the hold down straps in position, feeding the attaching studs through holes in the end of the straps. Install the nuts but do not tighten.

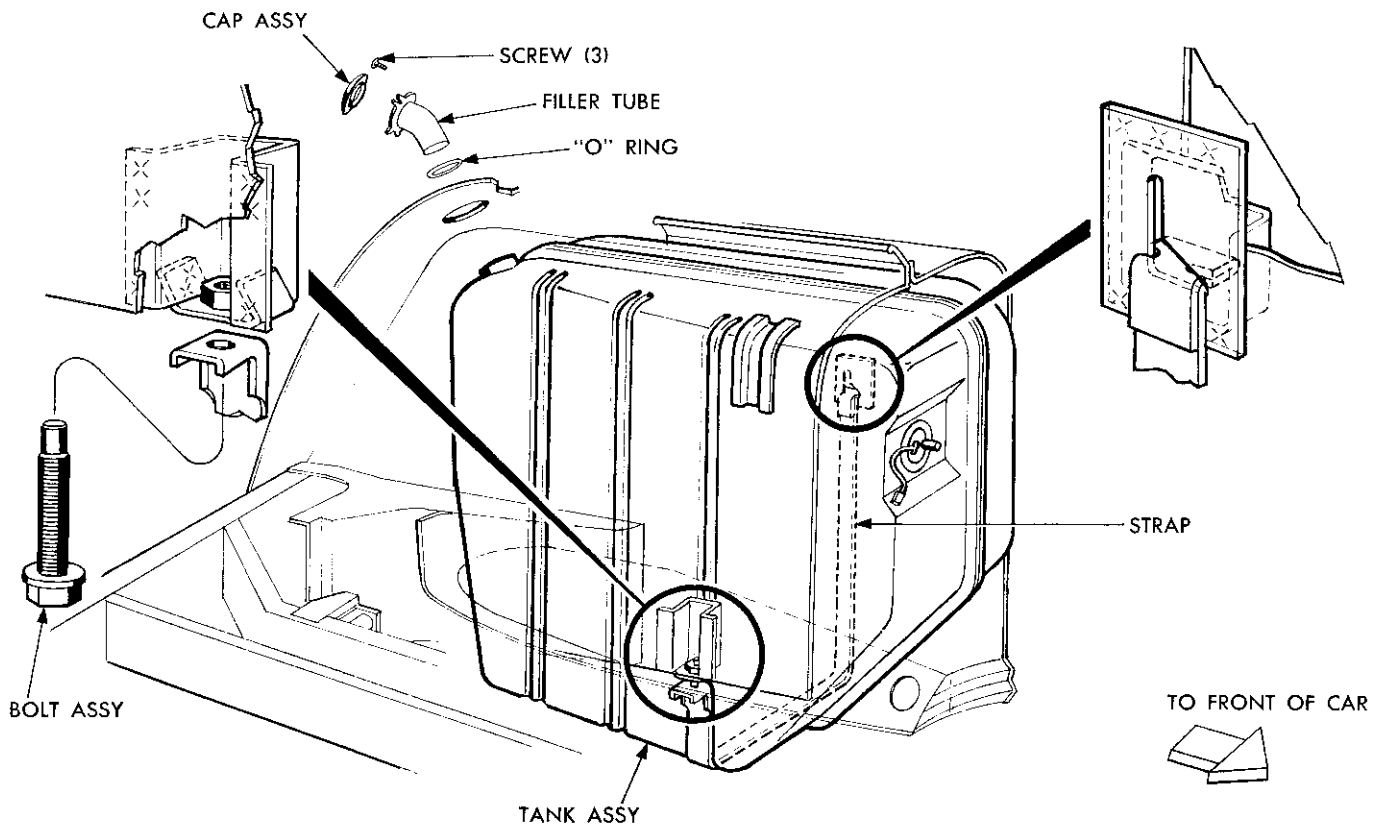


Fig. 41—Fuel Tank Mounting (Town and Country)

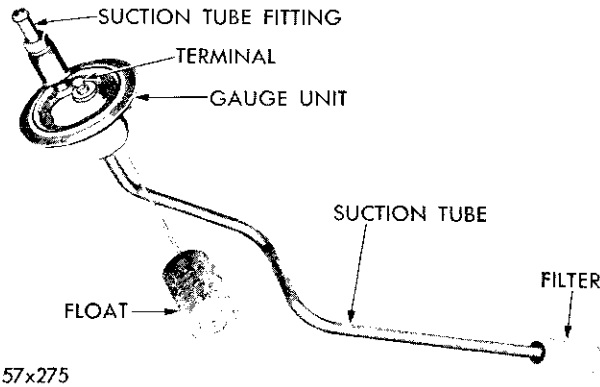


Fig. 42—Fuel Gauge Tank Unit

(5) Guide the button head of the studs into the slots in the frame and down into position. Tighten the hold down strap attaching nuts securely.

(6) Slide the vent tube hose over the end of the vent tube. Connect the lead wire to the tank gauge unit and reconnect the fuel line.

(7) Refill the tank and check for leaks.

27. FUEL TANK (Imperial) (Fig. 43)

a. Removal

(1) Drain the tank, then disconnect the fuel line and the lead wire to the gauge unit.

(2) Disengage the vent tube from the vent tube hose. (Refer to Fig. 43.)

(3) Using Tool C-3584, hooked into the filler tube cap opening, pull the filler tube out of the fuel tank. As filler tube is being removed, the vent tube on the filler tube will pull out of the connector hose. (Refer to Fig. 43.) Slide grommet off filler tube.

(4) Loosen the nuts that hold the ends of the fuel tank hold down straps until the button head studs can be disengaged from the floor pan brackets. Disengage studs from brackets and at the same time support the tank. Drop the tank straight down and out from under car.

(5) Remove the gauge tank unit, using spanner wrench Tool C-3582.

Check the rubber grommet removed from the filler tube. If cracked or deteriorated, install a new grommet at reassembly.

b. Installation

Before installing the tank gauge unit, check the condition of the filter on the end of suction tube. If filter is corroded, install a new filter.

(1) Position the fuel tank gauge unit in tank, using a new gasket. Using Tool C-3582, tighten unit securely.

(2) Place a new "O" seal ring in the fuel tank filler neck.

(3) Slide the fuel tank up into position against floor pan. Install the button head studs into slots in the mounting brackets. Snug nuts down but do not tighten.

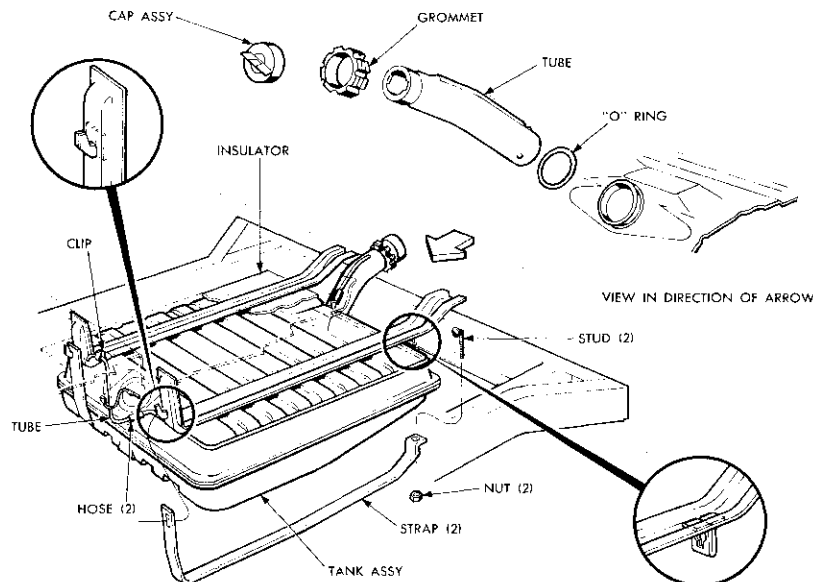


Fig. 43—Fuel Tank Mounting (Imperial)

(4) Slide grommet over the filler tube, then insert filler tube through opening in rear panel. (Be sure the vent tube is up and engages the rubber hose connection.)

(5) Push the filler tube down until the tube is aligned with the tank neck opening. Using a rubber hammer, drive the tube into the seal ring until the dimples on the tube seat on the shoulder of the seal retainer. (Check to see that the vent tube has entered the hose correctly.)

(6) Connect the vent tube on the forward end of the tank with the rubber hose and vent tube mounted on the floor pan. Be sure the end of the tube is open. (Refer to Fig. 43.)

(7) Tighten the tank hold down strap attaching nuts securely. Connect the fuel line to the tank and wire lead to the tank unit.

(8) Refill the tank and check for leaks.

**28. FUEL TANK (Town and Country) (PC-1, PC-3)
(Fig. 41)**

a. Removal

(1) Drain the tank, and disconnect the fuel line and the lead to the gauge unit under the rear fender, behind the wheel house.

(2) Remove the screws that attach the stone shield to the lower edge of the wheel house at the rear. Remove the shield.

(3) Remove the button plug at the rear of wheel house (in front of gauge unit).

(4) Remove the bolt and washer that attaches the tank hold down strap to the lower support.

(5) Remove the filler cap and the filler tube sleeve attaching screws. Using a suitable tool, or Tool C-3584, pull out the filler tube. Slide the sleeve out of the body opening. Remove the gasket from sleeve and "O" ring from the filler tube.

(6) Slide the tank down and out from under the quarter panel. Reach up under the quarter panel and

disengage the hold down strap from the bracket. If strap is to be replaced, refer to Figure 41.

(7) Loosen the tank gauge unit, using a spanner wrench Tool C-3582. Slide the unit up and out of the tank.

Check the condition of the rubber "O" ring. If cracked or deteriorated, install a new "O" ring at reassembly.

b. Installation

Before installing the tank gauge unit, check the condition of the filter on the end of suction tube. If the filter is corroded, install a new filter.

(1) Position the fuel tank gauge unit in tank, using a new gasket. Tighten securely, using Tool C-3582.

(2) Slide the hold down strap up under quarter panel, inserting the end of strap into slot. Allow the strap to hang.

(3) Install a new "O" ring in the neck of the tank. (Fig. 41).

(4) Slide the tank up under the quarter panel with the gauge unit facing front of the vehicle. Push the tank up into position. Make sure the filler neck is aligned with the opening in top of the quarter panel. Attach with the strap and bolt. Do not tighten.

(5) Place a new gasket over the filler tube and down against the flange. Insert the filler tube down into neck of tank. Drive the tube into "O" ring until the dimples in the tube contact the seal retainer. Be sure the anchor tab on tube is aligned with a screw hole. Install the screws and tighten securely.

(6) Tighten the fuel tank hold down strap bolt securely.

(7) Install the stone shield. Connect fuel line and lead to gauge unit. Reinstall the button plugs. Refill the tank and check for leaks.

For testing the fuel gauge, refer to the Electrical Group, "Gauges."

RAM INDUCTION MANIFOLD

The Ram Induction Manifold equipped engine, as shown in Figure 44, consists of twin air cleaners, twin AFB carburetors (with individual automatic well type chokes) and two aluminum manifolds, containing eight long sweeping passages (four in each manifold) all of which represent a new method of fuel induction.

The air-fuel mixture from each carburetor flows into a chamber directly under the carburetor, then passes through the long individual intake branches to the opposite cylinder bank. The right hand carburetor supplies air-fuel mixture for the left hand cylinder bank, whereas the left hand carburetor

supplies the right hand cylinder bank. The passages between the right and left hand manifolds are interconnected with a pressure equalizer tube, to maintain balance of the engine pulsations.

The throttle linkage operates through a center mounted ball crank and controls both carburetors at the same time. It is very important that if one or more of the carburetors has been removed or either manifold, that a complete linkage adjustment be made in order to obtain peak engine performance. (Refer to Paragraph 31 of this Group for setting the throttle linkage.)

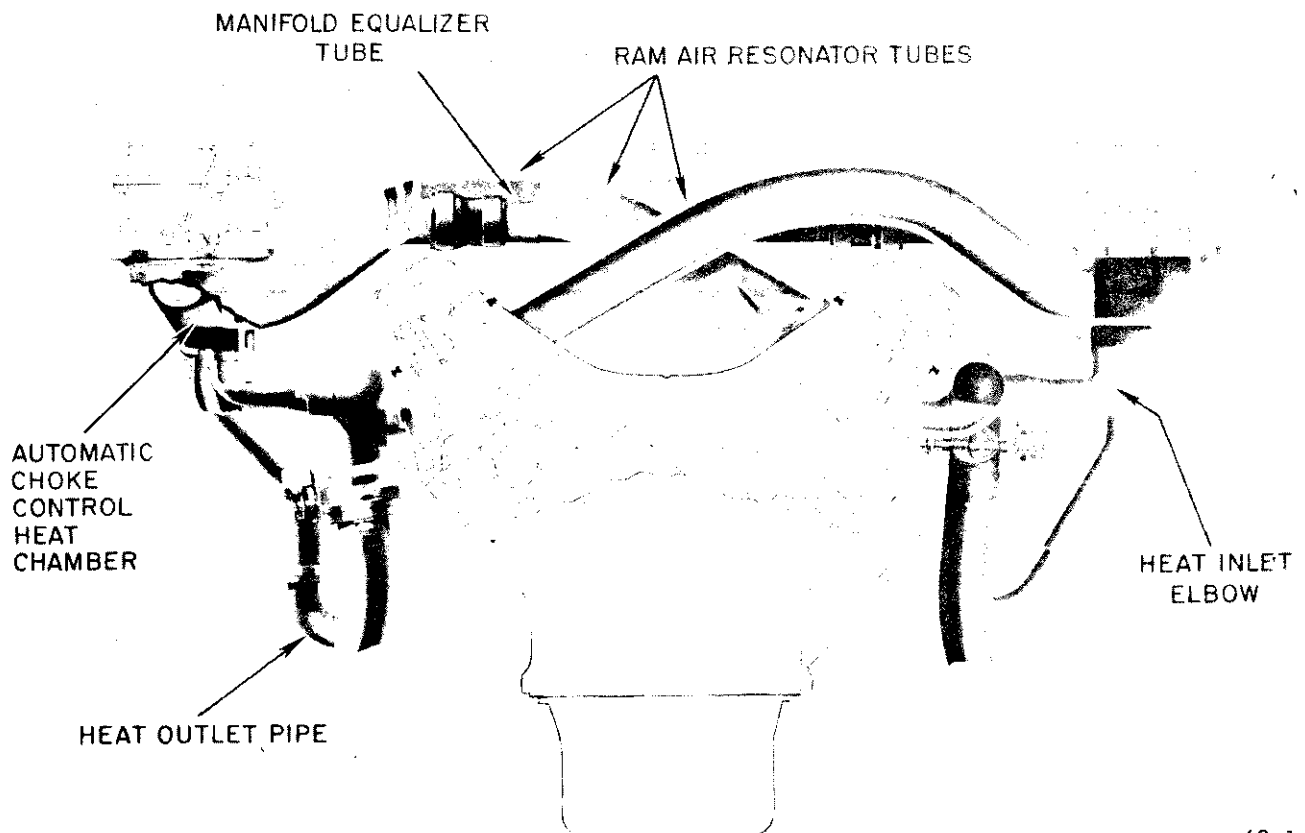


Fig. 44—Ram Manifold (Sectional View)

SERVICE PROCEDURES

29. REMOVING THE RAM MANIFOLDS

Should it become necessary to remove either the right or left intake (or both) manifolds, refer to Figure 45, then proceed as follows:

- (1) Drain the cooling system.
- (2) Remove the carburetor air cleaners.
- (3) Disconnect the fuel line between the fuel pump and the left hand carburetor.
- (4) Disconnect the fuel line between the left and right hand carburetor.
- (5) Disconnect the vacuum line between the right hand carburetor and the distributor. Disconnect the Anti-Stall device vacuum line.
- (6) Remove the high tension coil wire.

(7) Disconnect the throttle linkage at both carburetors and the bellcrank, to the accelerator shaft.

(8) Loosen the clamps that attach the equalizer tube couplings to the manifolds and to the equalizer tube. Slide either coupling inward on the tube far enough to clear the manifold tube opening. Lift the equalizer tube, couplings and clamps up and away from engine.

(9) Disconnect the power steering hoses (if so equipped) at the pump and secure against the fire wall.

(10) Remove the air conditioning compressor and brackets (if so equipped). Refer to Air Conditioning, Group 24.

To remove the left hand manifold, proceed as follows:

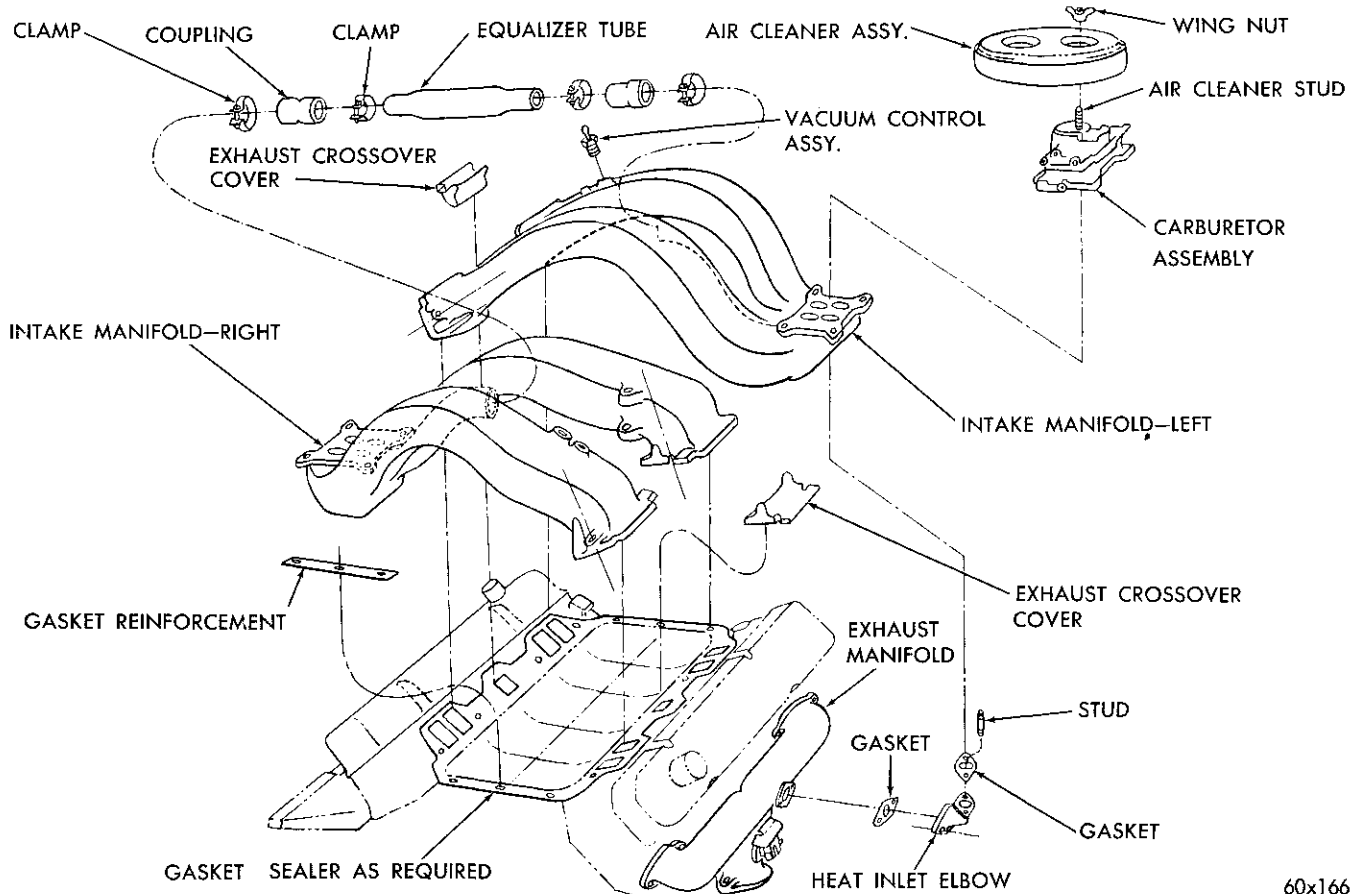


Fig. 45—Ram Manifold (Exploded View)

(11) Remove the eight attaching bolts that hold the left fender shield access plate to the fender shield, then slide the plate out of the engine compartment.

(12) Remove the two bolts that attach the left hand by-pass pipe to the lower chamber.

(13) Remove the two bolts that attach the left

hand exhaust manifold elbow to the lower chamber. Discard the gaskets.

(14) Remove the four bolts that attach the ram manifold to the right bank cylinder head. Remove the exhaust passage crossover cover.

(15) Lift the ram manifold and carburetor from the engine as an assembly.

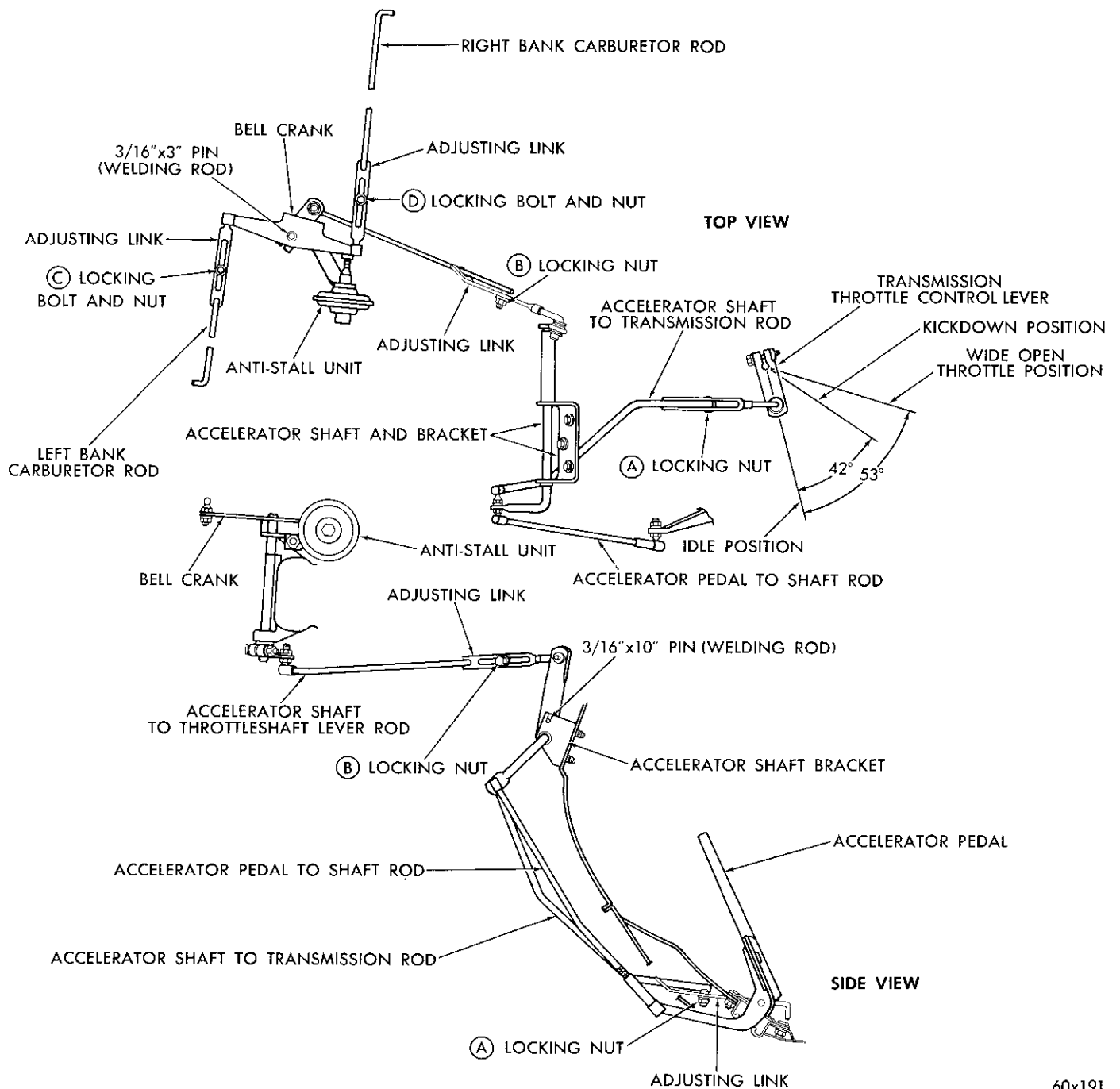


Fig. 46—Throttle Linkage - Ram Manifold (Schematic View)

(16) Remove the nuts that attach the carburetor to the intake manifold, then disconnect the automatic choke rod from the lever. Remove the carburetor.

(17) Remove the two bolts that retain the automatic choke in the manifold. Lift choke assembly, gasket, reinforcement and well cup out of the manifold.

To remove the right hand ram manifold, proceed as follows:

(18) Remove the eight attaching bolts that hold the right fender shield access plate to the fender shield, then slide the plate out of the engine compartment.

(19) Remove the two bolts that attach the right hand exhaust bypass pipe to the lower chamber.

(20) Remove the two bolts that attach the right hand exhaust manifold elbow to the lower chamber. Discard the gaskets.

(21) Remove the four bolts that attach the ram manifold to the left hand bank cylinder head. Remove the exhaust passage crossover cover.

(22) Lift the ram manifold and carburetor from the engine as an assembly.

(23) Remove the nuts that attach the carburetor to the intake manifold, then disconnect the automatic choke rod from the lever. Remove the carburetor.

(24) Remove the two bolts that retain the automatic choke in the manifold, lift choke assembly, gasket, reinforcement and well cup out of the manifold.

With the manifolds removed, work can now be done on cylinder heads, tappets, etc.

30. INSTALLING THE RAM MANIFOLD

When installing the ram manifold, be sure and use new gaskets and be sure all mating surfaces are smooth and clean. Check to be sure that both manifold heat control valves are operating freely. If stuck or binding, free up, using heat control valve solvent.

To install the left hand ram intake manifold, refer to Figure 45, then proceed as follows:

(1) Place the automatic choke control unit in the reinforcement and well cup. Slide the assembly down into position in the intake manifold, using a new gasket. Install attaching bolts and tighten.

(2) Place the carburetor in position on the mounting pad of the intake manifold and engage the auto-

matic choke control rod with the choke lever. Secure with clip. Install the carburetor mounting nuts and tighten.

(3) Place the intake manifold assembly in position on the right hand bank cylinder head. Place the exhaust crossover passage cover over the passage, then install the manifold attaching bolts finger tight.

(4) Slide a new gasket between the left hand exhaust manifold elbow and the lower chamber of the intake manifold. Install attaching bolts finger tight.

(5) Slide a new gasket between the left hand exhaust by-pass pipe and the manifold lower chamber. Install the attaching bolts and tighten to 10 foot-pounds torque. Tighten the elbow attaching bolts to 10 foot-pounds torque and the intake manifold bolts to 50 foot-pounds torque.

(6) Slide the left hand fender shield access plate into position against the fender shield. Install the bolts and tighten.

If both ram manifolds were removed, continue to install the right hand manifold as follows:

(7) Place the automatic choke control unit in the reinforcement and well cup, slide the assembly down into position in the intake manifold, using a new gasket. Install attaching bolts and tighten.

(8) Place the carburetor in position on the mounting pad of the intake manifold and engage the automatic choke control rod with the choke lever. Secure with clip. Install the carburetor mounting nuts and tighten.

(9) Place the intake manifold assembly in position on the left hand bank cylinder head. Place the exhaust crossover passage cover over the passage, then install the manifold attaching bolts finger tight.

(10) Slide a new gasket between the right hand exhaust manifold elbow and the lower chamber of the intake manifold. Install the attaching bolts finger tight.

(11) Slide a new gasket between the right hand exhaust by-pass pipe and the lower chamber. Install attaching bolts and tighten to 10 foot-pounds torque. Tighten the elbow attaching bolts to 10 foot-pounds torque and the intake manifold bolts to 50 foot-pounds torque.

(12) Slide the right hand fender shield access plate into position against the fender shield. Install bolts and tighten.

(13) Place the air conditioning compressor and brackets in position (if so equipped) and install the attaching bolts. Tighten securely. (Refer to the Air Conditioning Group 24 for method of recharging the system.)

(14) Reconnect the Power Steering hoses to the pump (if so equipped). (Refer to Power Steering Group 19 for method of bleeding air out of the system.)

(15) Slide the equalizer tube, clamps and couplings over the manifold tubes. Slide either coupling outward far enough to firmly engage the manifold. Tighten the clamps securely.

(16) Reconnect the throttle linkage at both carburetors and bellcrank to accelerator shaft.

(17) Reinstall the high tension coil wire.

(18) Reconnect the vacuum line between the left hand carburetor and the distributor and the vacuum line to the Anti-Stall device.

(19) Reconnect the fuel line between the left and right hand carburetor.

(20) Reconnect the fuel line between the fuel pump and the left hand carburetor.

(21) Reinstall the right and left carburetor air cleaners.

(22) Refill the cooling system to required capacity.

After the ram manifolds have been installed, it is very important that the setting the throttle linkage be performed in order to obtain peak engine performance.

31. SETTING THE RAM MANIFOLD THROTTLE LINKAGE

Setting the throttle linkage is a very important step, if improperly set. Various conditions affecting car performance can be encountered, such as loss of performance, no wide open throttle response, delayed shifting of the transmission, no kickdown, delayed upshifts, etc.

Setting the throttle linkage is divided into four parts; namely, positioning the accelerator shaft, positioning the accelerator pedal, setting the bellcrank and synchronizing each carburetor and adjusting anti-stall device. **It is very important that the throttle linkage be set in this order.** At any time the throttle linkage is reset, the anti-stall device must be reset.

a. Positioning the Accelerator Shaft

To position the accelerator shaft, refer to Figure 46 then proceed as follows:

(1) Loosen the adjusting nuts "A" and "B" (accelerator shaft to transmission rod and accelerator shaft to throttle shaft lever rod).

(2) Insert a piece of 3/16 inch drill rod, 10 inches long into the accelerator shaft bracket and through hole in the lever.

(3) Move the transmission throttle control lever forward until it stops. Tighten the locknut "A" securely. This positions the accelerator shaft.

b. Positioning the Accelerator Pedal

To position the accelerator pedal, proceed as follows:

(1) Unsnap the accelerator pedal to shaft rod.

(2) Turn the threaded end of the rod either in or out until a measurement of 114 degrees is obtained between the floor of the car and the flat face of the accelerator pedal.

NOTE: This measurement can be made with a protractor.

(3) After correct measurement has been obtained, reconnect the rod. Remove the drill rod from the accelerator shaft bracket.

c. Setting the Bellcrank

To set the bellcrank, refer to Figure 46, then proceed as follows:

(1) Loosen locking nuts "C" and "D" (left and right bank carburetor rods).

(2) Back off the anti-stall adjusting plunger far enough to allow the bellcrank to be pivoted.

NOTE: Hold the anti-stall control push rod while adjusting set screw to prevent damage to the diaphragm.

(3) Pivot the bellcrank until a $\frac{3}{16}$ inch piece of drill rod 3 inches long can be inserted through the bellcrank hole and down into the locating hole in the intake manifold.

(4) Inspect each carburetor to be sure the choke valves are open, that the fast idle cams are released, and that the throttle valves are in the closed position.

(5) Tighten locking nuts "C" and "D" securely. Remove the drill rod from bellcrank.

(6) Push rearward on the accelerator shaft to throttle shaft lever rod adjusting link, until stop is felt. Tighten the locking nut "B" securely.

32. ADJUSTING THE ANTI-STALL DEVICE

(1) To readjust the anti-stall device, it is necessary that the engine be at normal operating temperature and that the curb idle speed be 725 to 750 rpm and constant with the transmission in neutral (N) and the air conditioning compressor "ON" (if so equipped). (See Paragraph 33 "Adjusting the Ram Manifold AFB 2903S Series Carburetors" to obtain this idle speed.)

(3) With the transmission in Drive (D) and with the parking brake and the foot brakes applied, turn the anti-stall plunger toward the bellcrank until clearance of .010" has been obtained. (Refer to Fig. 47.)

33. ADJUSTING THE RAM MANIFOLD AFB 2903S SERIES CARBURETOR

Twin 4 barrel AFB 2903S series carburetors are used on the Ram Induction Manifold equipped cars. These carburetors are fundamentally the same as AFB 4 barrel carburetors used on other 1960 models. The service procedures for disassembly, cleaning, inspection and reassembly follow the same sequence of operations as covered for the other AFB carburetors.

The following information covers only the adjustments that differ from conventional mounted carburetors.

a. Idle Speed and Mixture Adjustment (On the Vehicle)

Before the idle speed and mixture adjustments are made, inspect to be sure that the throttle linkage to both carburetors allows the return to the idle position simultaneously. This is very important in ob-

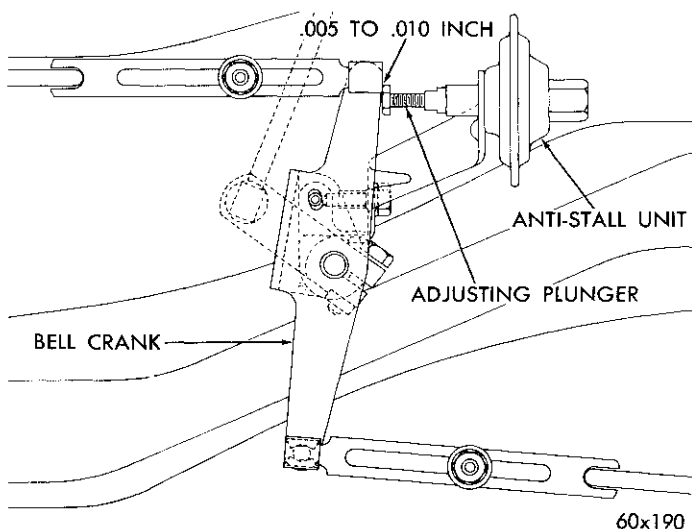


Fig. 47—Anti-Stall Adjustment

taining a good idle setting, since these carburetors are equipped with a bypass air bleed for setting the idle speed.

The ignition timing should be checked to make certain it is within specifications, 5°BTC on the Chrysler Model C300F and 7½° on the De Soto Ram Charge Adventurer engine as this also affects idle quality. If the ignition timing is not within specifications, disconnect the vacuum advance line at the distributor as there is full vacuum advance at idle and set the timing with the engine idle speed below 600 rpm and transmission in neutral and air conditioning compressor "OFF" (if so equipped). If, under these conditions, idle speed is still above 600 rpm, adjust both carburetor idle bypass air bleed screws equally until desired idle speed is obtained.

Connect the vacuum advance line and warm engine up to normal operating temperature. Disconnect each carburetor throttle rod at the bell crank on the manifold, then proceed as follows:

- (1) Turn all adjusting screws (mixture and bypass) in finger tight.
- (2) Open the by-pass idle air bleed screws one full turn.
- (3) Open each idle mixture screw ¾ turn.
- (4) Connect a tachometer, then start the engine.
- (5) Turn the mixture screws on the left carburetor ⅛ turn at a time until the smoothest idle has been obtained.
- (6) Repeat this procedure on the right carburetor, keeping the mixture screws within ⅛ turn of each other.
- (7) With the transmission in Neutral (N), air conditioning compressor "ON" (if so equipped) and parking brake applied, set the curb idle speed from 725 to 750 rpm by adjusting the by-pass air bleed screws on each carburetor. **Be sure to keep the by-pass air bleed screw openings equal on both carburetors.**
- (8) Repeat steps 5, 6 and 7 until a smooth idle at 725 to 750 rpm has been obtained.

(9) Connect each carburetor throttle rod at the bellcrank.

If either carburetor has been removed for cleaning or repair, set the throttle linkage as outlined under the "Ram Manifold" Paragraph 31.

b. Fast Idle Adjustment (On Vehicle)

When making fast idle adjustment on the vehicle, each AFB carburetor should be adjusted individually. To make the fast idle adjustment, proceed as follows:

(1) The engine should be at normal operating temperature and have a curb idle speed of 725 to 750 rpm with transmission in (N) and air conditioning compressor "ON" (if so equipped).

(2) Turn air conditioning compressor "OFF" (if so equipped).

(3) Remove each air cleaner.

(4) Disconnect each throttle rod at the bellcrank on the intake manifold.

(5) Open the throttle valves of the left carburetor far enough to allow positioning of the fast idle cam to the fast idle index mark. The right carburetor should remain at the curb idle position.

(6) Adjust fast idle screw until a fast idle speed of 1375 to 1425 rpm is obtained on the Chrysler Model C-300F and 1475 to 1525 on the De Soto Ram Charge Adventurer engine.

(7) After the desired engine speed has been obtained, open the throttle slightly to allow the fast idle cam to return to the open choke (or off fast idle) position.

(8) Repeat steps 5, 6 and 7 in setting right carburetor fast idle speed as it is very important at the completion of this step (8), that each carburetor has identical fast idle speeds.

NOTE: There is no specification for engine rpm with both carburetors simultaneously set at the fast idle position.

(9) Connect both carburetor throttle rods to the bell crank.

c. Indexing the Choke Piston

Before indexing the choke piston, be sure the ignition system and timing are at the required specifications, that the manifold heat control valves are operating properly (this is very important for normal warm-up of the engine).

After the above items have been inspected and corrected if necessary, index the choke piston as follows:

(1) Remove the choke housing baffle plate.

(2) Remove the throttle return spring, so that the throttle can be set at one quarter open.

(3) Be sure the choke valve is wide open.

(4) Slide a .026 inch wire into the choke piston slot, so that the hook on the end enters the slot in the cylinder, as shown in Figure 47. (This gauge can be made by bending the .026 inch end of wire gauge Tool T109-189 to form the shape, as shown in Fig. 47.)

(5) Push on the choke valve, counter-clockwise, trapping the wire gauge between the piston and the cylinder slot (choke linkage hanging free).

(6) It should now be possible to insert a No. 32 drill between the choke valve and wall of the air horn. If an adjustment is necessary, bend the link that connects the choke shaft to the choke piston lever (at angle) until the correct clearance has been obtained.

(7) Place the choke baffle plate in position and install retaining screws. Tighten securely.

(8) Connect the throttle return spring.