

SECTION 3-C ADJUSTMENTS AND REPLACEMENTS—EXCEPT IN PUMP AND CARBURETOR ASSEMBLIES

CONTENTS OF SECTION 3-C

| Paragraph | Subject | Page | Paragraph | Subject | Page |
|-----------|--|------|-----------|---|------|
| 3-7 | Air Cleaner, Gas Filter and Manifold Valve Service . . . | 3-12 | 3-9 | Throttle Linkage and Dash Pot Adjustments | 3-15 |
| 3-8 | Carburetor Idle and Automatic Choke Adjustments . . . | 3-14 | 3-10 | Replacement of Gasoline Tank or Filler | 3-17 |

3-7 AIR CLEANER, GAS FILTER AND MANIFOLD VALVE SERVICE

a. Air Cleaner Service

An air cleaner with a dirty element will restrict the air flow to the carburetor and cause a rich mixture at all speeds. The device will not properly remove dirt from the air and the dirt entering the engine will cause abnormal formation of carbon, sticking valves, and wear of piston rings and cylinder bores.

Regular cleaning and inspection of the element at 8000 mile intervals (or more frequently in dusty territory) is necessary to prevent excessive engine wear and abnormal fuel consumption. The procedure for cleaning the air cleaner is given under Lubricare Instructions, paragraphs 1-2.

b. Cleaning Gasoline Filter —V-8 Engine

The gasoline filter or strainer is of the glass bowl type and is located in the line between the fuel pump and the carburetor. The filter is mounted solidly in a steel line and therefore requires no mounting bracket.

The filter element has a large filtering area. It is of fine enough material to assure that any particles which pass through it are too small to interfere with the operation of the float needle and seat, and also too small to cause clogging of the smallest passages in the carburetor. This element prevents the passage of water under ordinary conditions; however, water or other foreign matter should never be allowed to collect in the bowl until it reaches the lowest part of the filtering element. To prevent this possibility, the glass bowl should be visually inspected at each 1000 mile Lubri-

care period and cleaned if necessary. The element should be replaced every 12,000 miles or 12 months (whichever occurs first). See paragraph 1-1.

To clean the filter, remove the bowl and dump the contents. Soak the bowl in a good cleaning solvent to loosen any deposits. Visually inspect the filtering element and gaskets; replace if necessary. Wipe the bowl clean with a clean cloth and reinstall, tightening thumb nut finger tight.

After assembling the fuel filter, always start the engine and observe the filter carefully to make sure that the gasket is not leaking.

c. Cleaning Gasoline Filter—V-6 Engine

In the V-6 engine, the gasoline filter is located in the carburetor fuel inlet. See Figure 3-11. When this type filter is used, the glass bowl type filter is omitted.

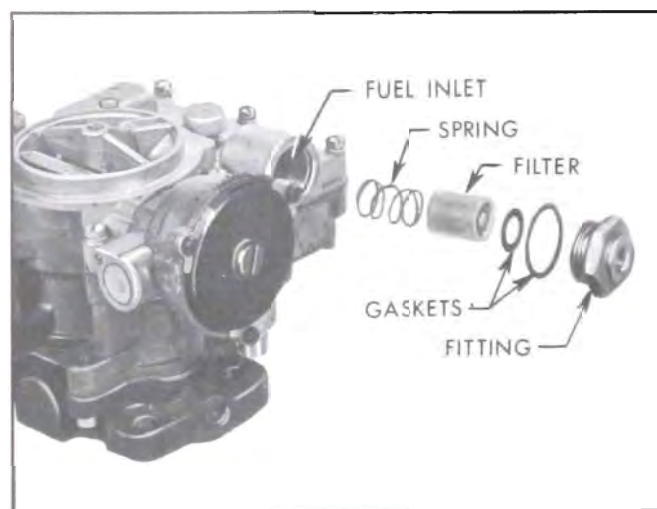


Figure 3-11—Fuel Filter Parts

The filter element is of sintered bronze, shaped to give the maximum filtering surface. The element is placed in the inlet hole with the cupped end with the center cone outward. The spring holds the element outward, sealing it against the small gasket in the inlet fitting. If the element should ever become plugged, pump pressure is sufficient to depress the spring so that the fuel by-passes the element. Thus, a plugged element, instead of causing the engine to stop running, allows the engine to continue running on unfiltered fuel. When carburetor flooding is encountered, this is an indication that the fuel is by-passing the element; the element should therefore be removed and cleaned.

Every 12,000 miles or 12 months (whichever occurs first), the filter element should be removed and washed thoroughly in a good cleaning solvent, then blown dry in a reverse direction. If the element does not clean up completely, a new element should be installed.

After assembling the filter element in the carburetor, always start the engine and check for leaks in the fuel line and fittings before installing the air cleaner.

d. Other Filters or Strainers

A woven plastic filter is located on the lower end of the fuel pickup pipe in the gas tank. This filter prevents dirt from entering the fuel line and also stops water unless the filter becomes completely submerged in water. This filter is self cleaning and normally requires no maintenance. Fuel stoppage at this point indicates that the gas tank contains an abnormal amount of sediment or water; the tank should therefore be removed and thoroughly cleaned.

A fine mesh strainer is located in some carburetor inlets. This strainer should seldom require cleaning because of the gasoline filter which precedes it in the gasoline supply line. This strainer should be inspected however, if fuel supply at carburetor inlet is adequate but carburetor operation indicates lack of fuel.

e. Freeing Up Sticking Exhaust Manifold Valve —V-6 Engine

Lubrication of the exhaust manifold valve shaft every 1000 miles is specified in Lubricare Instructions (par. 1-1).

Carbon or lead salt deposits around the valve shaft may cause the valve to stick or become

sluggish in operation. A valve sticking in the open position will cause slow engine warm up, excessive spitting and sluggish engine operation when cold. A valve sticking in the closed position will cause overheating, loss of power, and hard starting when the engine is hot, and may also cause warped or cracked manifolds. Sticking in either position will adversely affect fuel economy.

If the manifold heat control valve is sticking or seized in the manifold, free it up by applying a good solvent such as "Buick Heat Trap Lubricant" to the valve shaft and bushings at both sides of the exhaust manifold. Allow the solvent to soak for a few minutes, then work the valve by rotating the counterweight. Severe cases may be freed by tapping endwise on the shaft with a light hammer. After the shaft is free, another application of lubricant will assure complete penetration of the shaft bushings.

f. Checking Manifold Valve Thermostat Setting —V-6 Engine

The setting of the exhaust manifold valve thermostat may be checked when the engine is at room temperature of approximately 70° F. Unhook the outer end of thermostat from anchor stud on the manifold and hold the valve in the closed position. To bring the end of thermostat to the anchor stud will then require approximately 1/2 turn wind-up of the thermostat as shown in Figure 3-12.

The thermostat is not adjustable and should never be distorted or altered in any way as this will affect its calibration. If the thermostat does not have the proper setting, or is damaged, it should be replaced.

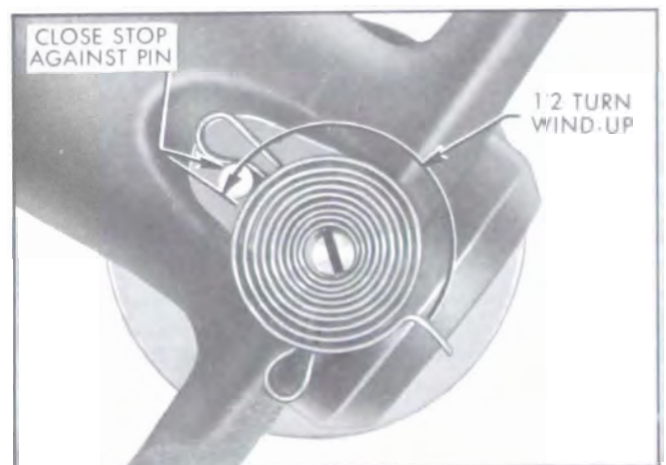


Figure 3-12—Manifold Valve Thermostat Wind-Up

3-14 ADJUSTMENTS**3-8 CARBURETOR IDLE AND AUTOMATIC CHOKE ADJUSTMENTS**

Carburetor adjustment should not be attempted until it is known that all items affecting engine Ignition and Compression are in good order, as outlined in paragraph 2-10. Any attempt to adjust or alter the carburetor to compensate for faulty conditions elsewhere in items affecting engine performance will result in reduced fuel economy and overall performance.

a. Initial Setting of Idle Needle Valves and Throttle Stop Screw

1. With engine stopped, turn both idle needle valves clockwise until they are lightly seated. Forcing valves hard against seats will score valves and seats and ruin them for proper adjustment.

2. Now turn each needle OUT one full turn. This setting should give an approximate idle mixture so that engine can be warmed up for final adjustment as described in b below.

3. Back off throttle stop screw and hold fast idle cam in HOT (choke open) position so that throttle valves are fully closed.

4. On all carburetors, turn throttle stop screw IN (clockwise) until it just contacts, then turn screw IN one complete turn. This setting should give an approximate idling speed so that engine can be warmed up for final adjustment as described below. For more exact initial settings, see specifications for carburetor being adjusted.

b. Final Adjustment of Idle Needle Valves and Throttle Stop Screw

1. With throttle stop screw and idle needle valves at the initial settings described above (subpar. a), start the engine and run it until it is at normal operating temperature.

CAUTION: Idle mixture and speed adjustments cannot be made satisfactorily with an abnormally hot engine. On any carburetor having a hot idle compensating valve it is particularly important that idle adjustments be made at normal temperature so that this valve will be closed.

2. With engine at normal operating temperature and idling at 525 RPM (575 RPM on air conditioned cars) in neutral or park, adjust

one needle valve at a time (Figure 3-13) to provide smooth idle, as follows:

(a) Slowly turn needle valve "IN" (clockwise) until engine just begins to lag or run irregularly because of lean mixture.

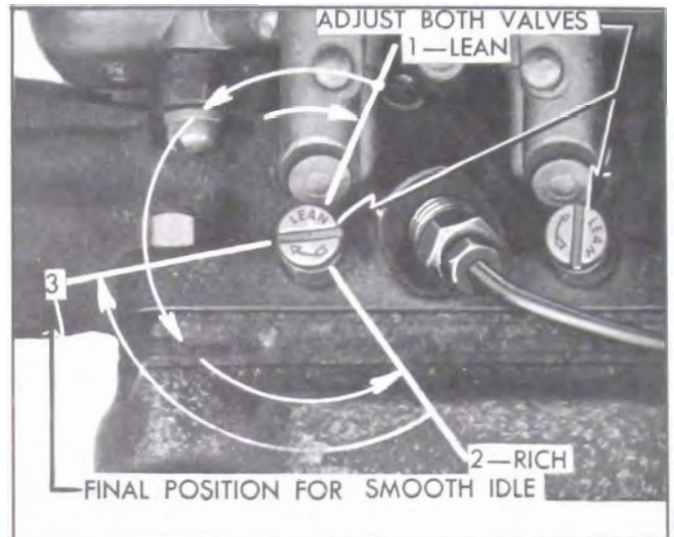


Figure 3-13-Adjustment of Idle Needle Valves.

(b) Slowly turn needle valve "OUT" until engine just begins to "roll" or "gallop" because of rich mixture.

(c) Slowly turn needle "IN" just enough to provide the smoothest engine operation.

(d) Repeat this same procedure on the other needle valve.

3. Readjust the throttle stop screw to provide a hot idling speed of 525 RPM (575 RPM on air conditioned cars) in neutral. If the idling speed increased very much during the needle valve adjustments it may be necessary to readjust the needle valves slightly to insure smoothest engine operation at the corrected idle speed.

Final adjustment of the carburetor idle needle valves also may be made with the aid of a combustion tester, tachometer, or vacuum gauge. When such instruments are used, be sure they are in good condition and are used in accordance with the instructions of the manufacturer.

Regardless of the methods or instruments used for making adjustments in the shop, the correctness of adjustment should be finally checked by a road test for smoothness at idling speed, power on acceleration, and freedom from sluggishness or flat spots throughout entire speed range.

c. Automatic Choke Adjustments

The choke thermostat is calibrated to give satisfactory performance with regular blends of fuel when it is placed at the standard factory setting, which is listed in the specifications for each carburetor.

When it is necessary to adjust the thermostat loosen the housing or cover attaching screws, and turn as required.

Thermostat settings other than standard should be used only when the car is habitually operated on special blends of fuel which do not give satisfactory warm-up performance with the standard setting. A "Lean" setting may be required with highly volatile fuel which produces excessive loading or rolling of engine on warm-up with the standard thermostat setting. A "Rich" setting should be used only when excessive spitting occurs on engine warm-up with the standard thermostat setting. When making either a "Lean" or "Rich" setting, change one point at a time and test results with engine

cold, until the desired performance is obtained.

If the engine operates on fast idle too long after starting or else moves to slow idle too soon, or the choke unloader does not operate properly, check the fast idle and choke unloader adjustments as described in paragraph 3-18.

3-9 THROTTLE LINKAGE AND DASH POT ADJUSTMENTS

The procedure for adjusting the throttle linkage and the dash pot is identical on synchromesh and automatic transmission cars. On automatic transmission cars, however, the throttle linkage actuates other linkage connected to a valve in the transmission. Therefore, a carburetor to transmission linkage adjustment is required on automatic transmission cars in addition to the adjustments necessary on synchromesh cars.

a. Throttle Linkage Adjustment

1. Make sure that accelerator pedal is in

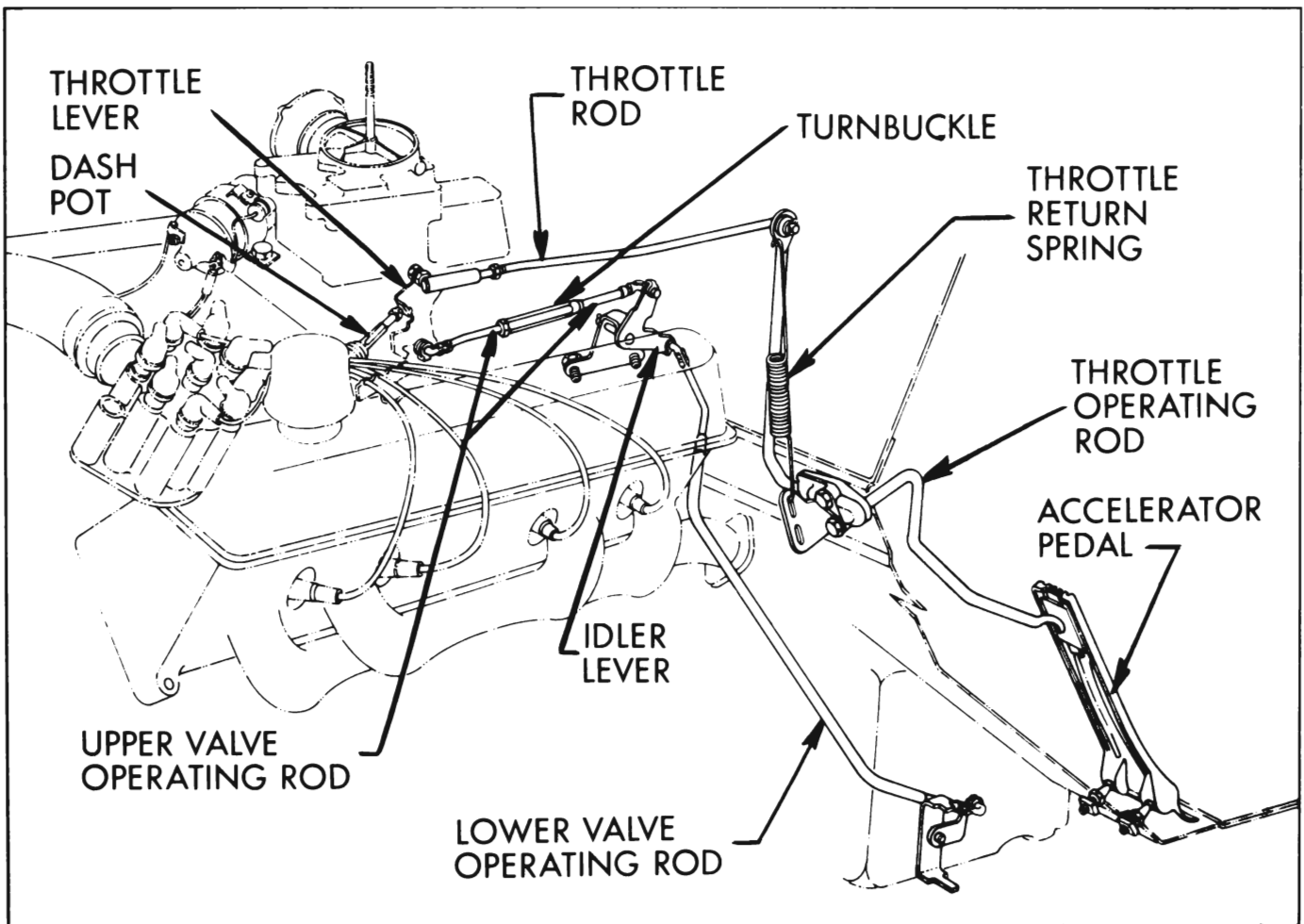


Figure 3-14—Throttle and Transmission Control Linkage (Automatic Transmission)

good condition and that floor mat is properly installed. Make sure pedal ball studs are tight in floor pan.

2. Check throttle linkage for proper lubrication. Make sure that pedal rod does not bind going through dash, and make sure that return spring fully closes the throttle.

3. On automatic transmission cars only, move throttle lever to wide open position and make sure carburetor to transmission linkage does not prevent throttle from opening completely. If throttle will not open easily without springing linkage, make a carburetor to transmission linkage adjustment before proceeding with throttle linkage adjustment (see subpar. b).

4. Disconnect rear end of throttle rod from throttle operating lever. See Figure 3-14.

5. While another man presses accelerator pedal firmly against floor mat, hold throttle in wide open position, and hold rear end of throttle rod at hole in throttle operating lever. Rod end must be approximately 1/16" short of entering hole in lever. Readjust throttle rod length as required to obtain this condition.

6. Connect throttle rod to operating lever and secure cotter pin.

7. With accelerator pedal pressed against floor mat, recheck throttle for wide open position.

8. Hold choke valve closed and move throttle lever to wide open position to check adjustment of choke unloader. If choke unloader does not operate properly, adjust as described in paragraph 3-17.

9. Finally, check for smooth operation of linkage from fully closed to wide open position of throttle. Make sure that throttle closes firmly against stop screw even when throttle is closed very slowly. The desired wide open condition is to have full opening of throttle valve just as accelerator pedal strikes floor mat rather than having stop on throttle lever strike hard against boss on throttle body.

b. Carburetor to Transmission Linkage Adjustment (Automatic Transmission Cars)

1. With throttle held in wide open position, check adjustment by pushing transmission linkage idler lever fully forward (through detent). Transmission linkage should have all "play" just taken out, but should not be adjusted so

short that stop in transmission prevents carburetor from reaching wide open throttle. See Figure 3-14.

2. If carburetor is prevented from reaching wide open position, lengthen rod as required by rotating turnbuckle.

3. If there is any play in the transmission linkage, shorten rod as required by rotating turnbuckle.

4. Tighten jam nut against turnbuckle. Recheck linkage adjustment by making sure that carburetor will reach wide open throttle easily and that transmission linkage has no "play" with throttle wide open.

CAUTION: Never drive the car with the transmission linkage misadjusted or disconnected. The transmission line pressure will be too low and burned-out clutches will result.

c. Dash Pot Adjustment

Adjust the dash pot with the engine at normal operating temperature.

1. Open throttle to clear fast idle cam, rotate cam to extreme fast idle position, and allow throttle to close against fast idle cam. See Figure 3-15.

2. Adjust dash pot until it just touches the throttle lever. This is a preliminary setting only--be sure to continue with the following steps.

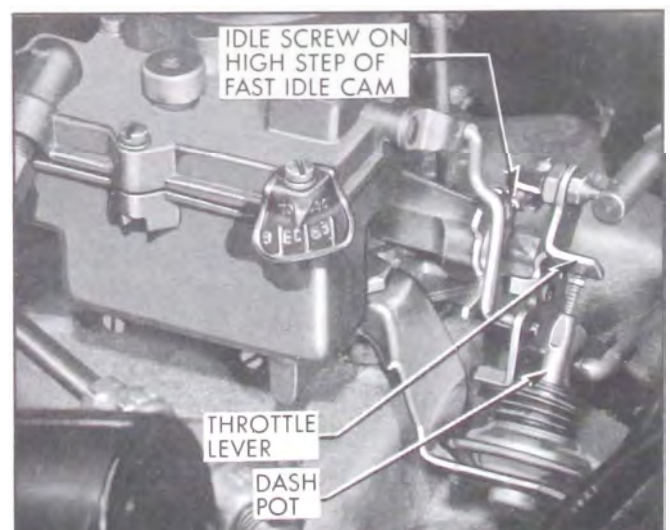


Figure 3-15—Dash Pot Adjustment

3. With transmission in Drive and brakes firmly applied, jab accelerator pedal and release rapidly. Note engine operation as throttle closes.

4. If engine stalls from too rapid closing of throttle, move dash pot toward throttle lever until its action prevents engine stalling. If excessive time is required for throttle to reach the fully closed position, move dash pot away from throttle lever.

5. If proper control cannot be obtained by adjustment, replace the dash pot.

3-10 REPLACEMENT OF GASOLINE TANK OR FILLER

The gas gauge tank unit is combined with the feed pipe. It is necessary to lower the gas tank to replace this unit. See Figures 1 and 3-2. On

air conditioner equipped cars, a vapor return pipe is also part of this assembly.

Before condemning a gas gauge tank unit, make sure that all dirt is cleaned from around the terminal; also make sure that the wire is securely fastened to the terminal and that the insulating cover is in place. An accumulation of road dirt around the gauge terminal may permit an electrical leak that will affect the accuracy of the gauge.

To remove a gasoline tank, first syphon the gas into a clean container. Remove the vent pipe, hoses and clips. Disconnect the vent hose from the breather pipe. Pull the wire to the gas gauge tank unit apart at the connector. Disconnect the support straps at their rear ends and remove the tank.

To install a gasoline tank, reverse the above procedure used for removal. Make sure that the wire to the gas gauge tank unit is clipped to the top of the tank.