

## 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 . . . . .	3-10	3-9	Throttle Linkage and Dash Pot Adjustments . . . . .	3-12
3-8	Carburetor Idle and Automatic Choke Adjustments . . . . .	3-11	3-10	Replacement of Gasoline Tank or Filler . . . . .	3-14

**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 5000 mile intervals (or more frequently in dusty territory) and replacing at 15,000 miles 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**

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 on a separate bracket which is attached under one of the thermostat housing bolt. In this location, the bowl can be inspected or cleaned conveniently without removing the air cleaner.

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 Lubricare period and cleaned if necessary. 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 Carburetor Gasoline Strainers**

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.

**d. Freeing Up Sticking Exhaust Manifold Valve**

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 valve shaft is sticking or frozen in the manifold, free it up by tapping on the ends with a light hammer, and by rotating the counterweight. Penetrating oil or kerosene may be used to aid in freeing the shaft. When the valve shaft is free, apply a mixture of kero-

sene and powdered graphite liberally to the shaft bearing; the mixture to be composed of 2½ ounces of powdered graphite to 1 pint of kerosene.

#### e. Checking Manifold Valve Thermostat Setting

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 ¾ turn wind-up of the thermostat as shown in figure 3-9.

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.

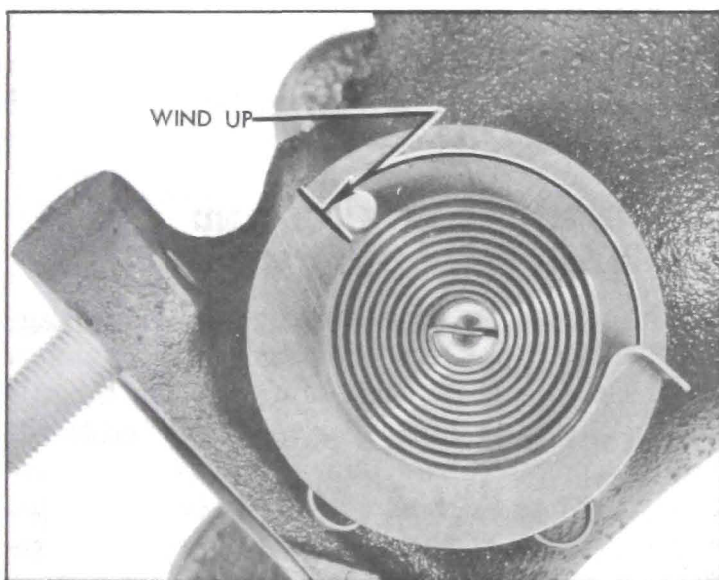


Figure 3-9—Valve Thermostat Wind-Up

### 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 2-9. *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.*

The two idle needle valves and the throttle stop screw are the only external means provided for adjusting the carburetor for engine performance. The idle needle valves control the

idle or low speed system of the carburetor; all adjustments or calibrations affecting the high speed, power, and float systems are accomplished during assembly of the carburetor.

#### 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 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.

#### 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.

2. With engine at normal operating temperature and idling at 485 RPM (550 RPM on air conditioned cars) in neutral or park, adjust one needle valve at a time (fig. 3-10) 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.

(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 485 RPM (550 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

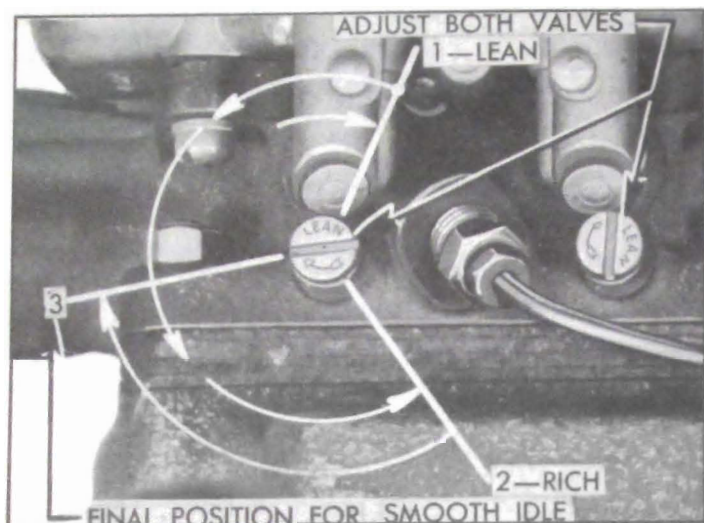


Figure 3-10—Adjustment of Idle Needle Valves

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. Checking Float Bowl Level

The sight hole in the float bowl may be used to check for proper fuel level in the bowl on the Rochester carburetor only.

With engine idling at normal operating temperature, remove plug from sight hole. The fuel will be just high enough to wet the threads at lower side of sight holes if the float is correctly adjusted. Securely install plug in sight hole after checking fuel level.

#### d. 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 at INDEX for *all Series* carburetors.

When it is necessary to adjust the thermostat loosen the housing or cover attaching screws and turn as required. On *Stromberg choke* it is also necessary to loosen the heat pipe connection to

turn the cover. *When tightening heat pipe connection after adjustment do not use excessive pressure, which may change position of thermostat cover.*

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 3-17 (Carter), 3-24 (Stromberg), or 3-29 (Rochester).

### 3-9 THROTTLE LINKAGE AND DASH POT ADJUSTMENTS

The procedure for adjusting throttle linkage is identical on Synchronesh and Dynaflo cars. On *Dynaflo* cars, however, the throttle linkage actuates other linkage connected to the stator control valve. Also, *Dynaflo* cars have a dash pot to prevent engine stalling from too rapid release of the accelerator pedal. Therefore, a stator linkage adjustment and a dash pot adjustment are required on *Dynaflo* cars in addition to the adjustments necessary on *Synchronesh* cars.

#### a. Throttle Linkage Adjustment

1. Make sure that accelerator pedal is in good condition and that floor mat is properly installed. Then tighten pedal mounting screws.
2. Check throttle linkage for proper lubrication. Make sure that pedal rod does not bind going through floor, and make sure that return spring is strong enough to fully close the throttle.
3. Adjust throttle stop screw for proper HOT idling speed (par. 3-8).
4. On *Dynaflo* cars only, move throttle lever to *wide open position* and make sure stator linkage does not prevent throttle from opening

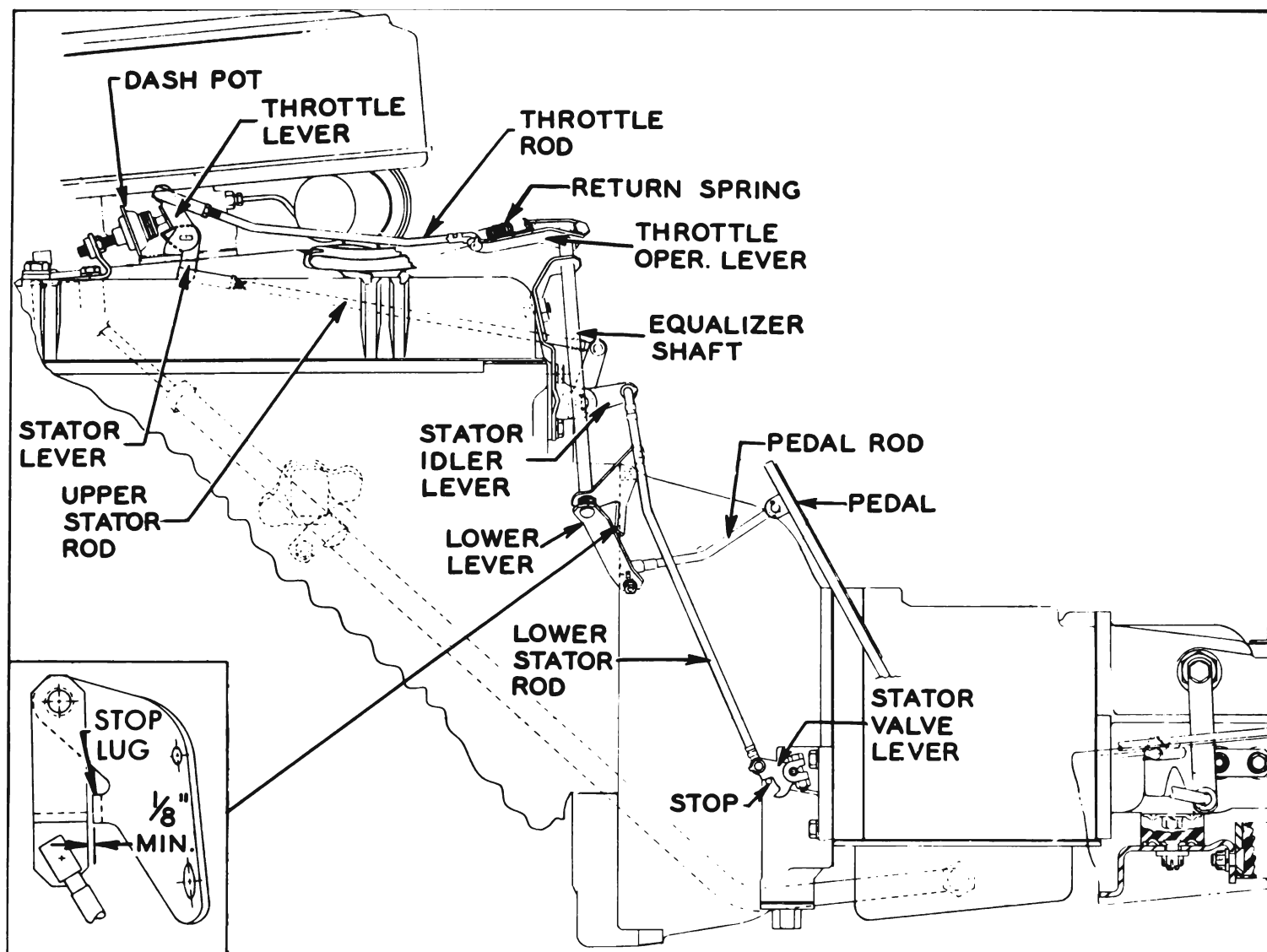


Figure 3-11—Throttle and Stator Control Linkage (Variable Pitch Dynaflo)

completely. With throttle wide open, stator rod should still have a slight amount of free movement; if stator rod is not free, make stator linkage adjustment (subpar. b) before proceeding with throttle linkage adjustment.

5. 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 (Carter) or 3-24 (Stromberg), or 3-29 (Rochester).

6. Disconnect throttle rod from throttle operating lever on equalizer shaft. See figure 3-11.

7. Adjust throttle operating rod in rod end at carburetor so that approximately  $\frac{1}{2}$ " of thread is exposed beyond lock nut.

8. 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  $\frac{1}{16}$ " short of entering hole in lever. Readjust throttle rod length

*slightly* or change position of lever on shaft as required to obtain this condition.

9. Connect throttle rod to operating lever and snap retaining clip over rod.

10. With accelerator pedal pressed against floor mat, check throttle for wide open position.

11. With throttle closed to hot idle position, check clearance between equalizer shaft lower lever and stop lug on the shaft-to-cowl mounting bracket. A minimum clearance of  $\frac{1}{8}$ " must exist at this point. See figure 3-11.

12. If clearance between lower lever and stop lug is less than  $\frac{1}{8}$ ", or throttle does not reach wide open position, readjust throttle rod length or change the position of upper lever on equalizer shaft slightly until proper settings are obtained.

13. 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. 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. Stator Linkage Adjustment  
(Variable Pitch Dynaflow)**

1. With throttle held in *wide open position*, adjust upper stator rod so that ball joint at forward end will just slip freely in stator lever on carburetor with stator rod pulled forward. See figure 3-11.

2. Now lengthen stator rod 1 turn. This provides a slight clearance at stator control valve stop on Dynaflow to make sure carburetor will reach wide-open throttle.

3. Reconnect ball joint to stator lever and tighten nut.

4. Check stator linkage adjustment by moving throttle lever to wide open position; then move stator rod endwise to make sure it has a slight free movement or "shake".

**c. Stator Linkage Adjustment  
(Flight Pitch Dynaflow)**

1. Disconnect upper stator rod ball joint from stator lever on carburetor.

2. With carburetor throttle set at hot idle position, adjust upper stator rod so that the ball joint at forward end will just slip freely into stator lever while holding both stator lever and rod in full rearward position.

3. *Shorten* stator rod one turn to provide clearance at stop in transmission.

4. Reconnect ball joint to stator lever and tighten nut.

**d. Dash Pot Adjustment (All Dynaflow)**

Adjust the dash pot only after the throttle linkage and stator lever adjustments have been made as described above (subpar. a and b) and the engine is 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 3-12.

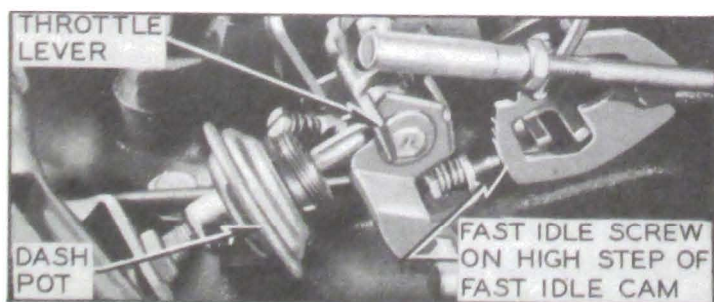


Figure 3-12—Dash Pot Adjustment

2. Adjust dash pot until it just touches the throttle lever, then screw dash pot one turn away from the throttle lever. Tighten lock nut. *This is a preliminary setting only—be sure to continue with the following steps.*

3. With transmission in Drive and brakes firmly applied, speed engine up to about 1500 RPM and release accelerator pedal 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. Always tighten lock nut after each adjustment.

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

**3-10 REPLACEMENT OF GASOLINE  
TANK OR FILLER**

The same gasoline tank is used on all series cars. However, 3 different fillers are used. Series 40-60 cars use a filler which is soldered into the tank. Series 50-70 cars also use a soldered-in filler, but it is longer than on the Series 40-60. Series 700 cars use a still different filler which requires a hose extension between the filler and the tank.

The gas gauge tank unit is combined with the feed pipe. It is not necessary to lower the gas tank to replace 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 flap is folded over and snapped over the wire. 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 remove the drain plug and drain the gas into a clean container. Disconnect the feed hose from the feed pipe. 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. Also make sure that the insulating strips are properly located between the tank and the upper supports on the body.