# SECTION 3-C

# ADJUSTMENTS AND REPLACEMENTS—EXCEPT IN PUMP AND CARBURETOR ASSEMBLIES

## CONTENTS OF SECTION 3-C



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

### a. Air Cleaner Service

An air cleaner with a dirty element, or with oil that is dirty, too heavy, or too high in the reservoir 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 of the element and reservoir and re-filling with clean oil at 5000-mile intervals, or more frequently in dusty territory, is necessary to prevent excessive engine wear and abnormal fuel consumption. The procedure for cleaning and refilling the air cleaner is given under Lubricare Instructions, paragraph 1-2.

### b. Cleaning Gasoline Filter

The gasoline filter or strainer is located in the gas tank at the tank outlet. It also serves as a tank drain plug and as a feed pipe to which the rubber fuel line is attached. See figure 3-2. In ordinary use, the strainer is self cleaning due to the surging action of the gasoline in the tank. Foreign matter dislodged by this surging action falls into the depression under the strainer.

However, whenever an engine has an inadequate fuel supply at the carburetor (see par. 3-12), first make sure there is gasoline in the tank, then remove and clean the filter as follows:

1. Get *clean* containers of sufficient capacity to hold gasoline in tank.

2. Squeeze wire clamp just enough to clear and slip it up hose a few inches. Then remove hose from feed pipe and drain gasoline from tank. This gasoline which comes out through strainer is clean and may be reused.

3. Remove strainer assembly and drain lower part of tank. This gasoline may have water and other foreign matter in it and must be disposed of.

4. Clean strainer by agitating in Bendix Metalclene or its equivalent. Direct an air stream into feed pipe to force dirt from outside of strainer. Rinse in cleaning solvent and again direct air stream into feed pipe. If strainer is not now clean or is damaged in any way, replace with a new strainer assembly.

5. Install strainer assembly, using a *new* rubber O-ring. CAUTION: *Torque to 7-10 ft. lbs. Over-tightening may break flange loose in tank.*

6. Install feed hose and clamp. Return gasoline to tank and check for a leak.

### 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 kerosene 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 ⅜ 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.

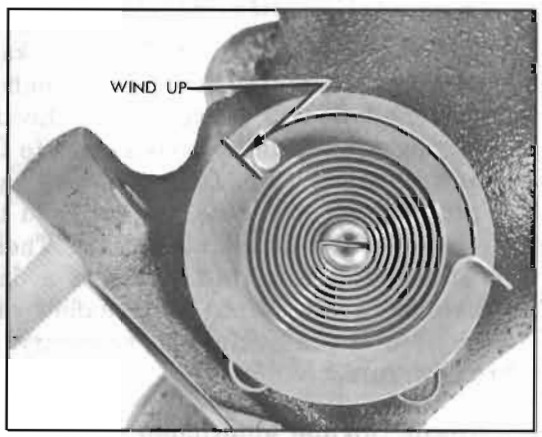


Figure 3-9—Valve Thermostat Wind-Up

## 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 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 in neutral. If the idling speed changed very much during

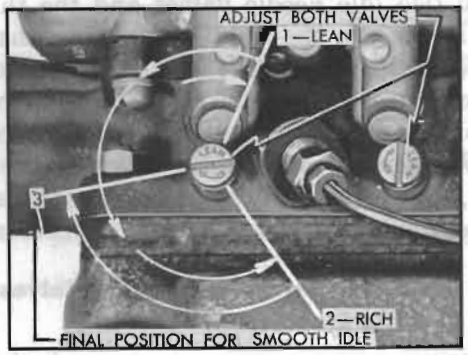


Figure 3-10—Adjustment of Idle Needle Valves

the needle valve adjustments it may be necessary to readjust the needle valves to insure smoothest engine operation at 485 RPM.

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 Synchromesh and Dynaflow cars. On *Dynaflow* cars, however, the throttle linkage actuates other linkage connected to the stator control valve. Also, Dynaflow 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 Dynaflow cars in addition to the adjustments necessary on Synchromesh 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 of 485 RPM (par. 3-8).

4. On Dynaflow cars only, move throttle lever to *wide open position* and make sure stator linkage does not prevent throttle from opening

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.

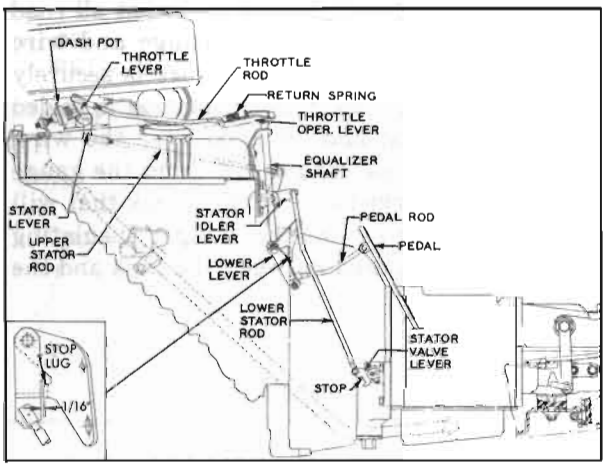


Figure 3-11—Throttle and Stator Control Linkage

7. Adjust throttle operating rod in rod end at carburetor so that approximately ½" 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 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 1/16" must exist at this point. See figure 3-11.

12. If clearance between lower lever and stop lug is less than 1/16", 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 (Dynaflow Only)

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. Dash Pot Adjustment (Dynaflow Only)

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

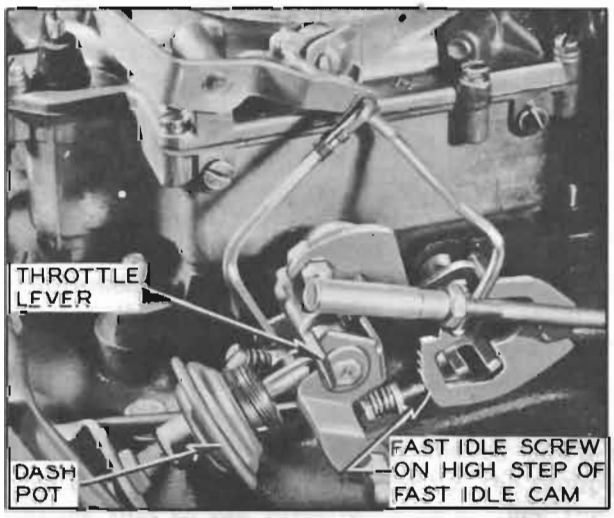


Figure 3-12—Dash Pot Adjustment

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.

2. Adjust dash pot until it just touches the throttle lever, then screw dash pot one additional turn toward 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 gasoline tank filler is furnished for service either in the tank and filler assembly, or separately. The same tank and filler assembly is used on all series cars.

To remove a gasoline tank, disconnect feed hose from gasoline feed pipe and drain tank. Disconnect vent hose from breather pipe. Support the tank while disconnecting support straps at rear ends, then lower tank far enough to disconnect the wire from gasoline gauge.

When installing gasoline tank by reversing procedure for removal, make sure that all road dirt is cleaned from gasoline gauge and wire terminal; also make sure that wire is securely attached to gauge and that insulation is folded over the terminal 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. Insulating strips must be located between the tank and the upper supports on body.