

## SECTION 3-C

### ADJUSTMENTS AND REPLACEMENTS—EXCEPT IN PUMP AND CARBURETOR ASSEMBLIES

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### **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, paragraph 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 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. The element should be replaced every 12000 miles for maximum filtering efficiency. 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.

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.

#### **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 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.

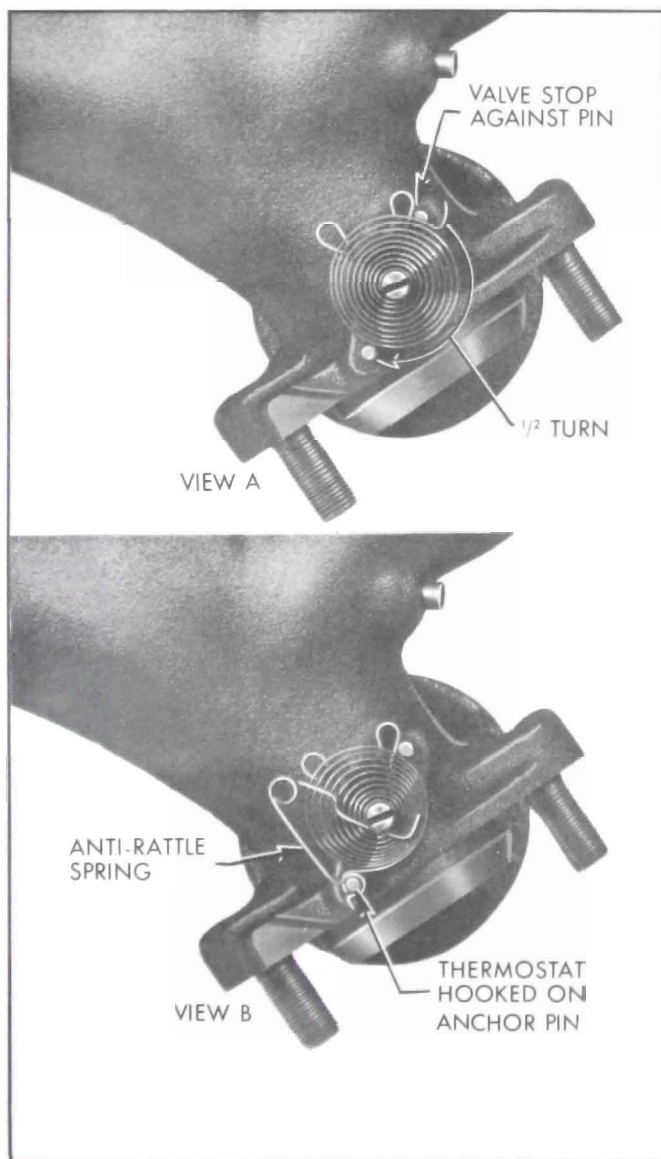


Figure 3-8—Exhaust Manifold Valve - Inner Side

### 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 pin on the manifold and hold the valve in the closed position. To bring the end of thermostat to the anchor pin will then require approximately 1/2 turn wind-up of the thermostat as shown in Figure 3-8.

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.

Fully open and fully closed positions of the exhaust manifold valve may be checked by the position of the heavy section of the manifold valve weight. If the heavy section is approximately straight up, the valve is fully closed; if the heavy section is forward, the valve is fully open. See Figure 3-9.

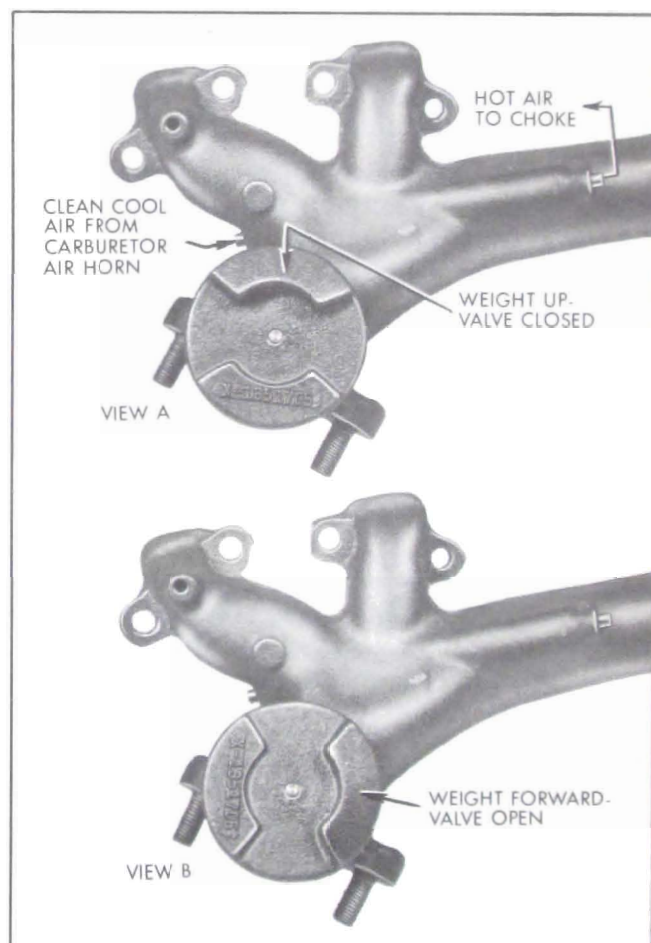


Figure 3-9—Choke Heat Pipe and Manifold Valve Positions

**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.

**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. 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 with 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 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 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. On Rochester chokes 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. Also, wrench should be over slotted area of connector or spreading may result.

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 (Rochester 2-Bbl.), 3-21 (Carter), or 3-25 (Rochester 4-Bbl.).

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

When adjusting throttle linkage, it should be kept in mind that the throttle linkage actuates other linkage connected to the stator control

valve in the transmission. Also, all cars have a dash pot to prevent engine stalling from rapid release of the accelerator pedal. Many times a stator linkage adjustment and a dash pot adjustment are also required when adjusting throttle linkage.

#### a. Throttle Linkage Adjustment

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

2. Remove air cleaner. 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. Move throttle lever to wide open position and check to make sure stator linkage does not prevent throttle from opening completely. If this is the case, make stator linkage adjustment (subpar. b) before proceeding with throttle linkage adjustment.

4. Disconnect throttle rod from throttle operating lever. See Figure 3-10.

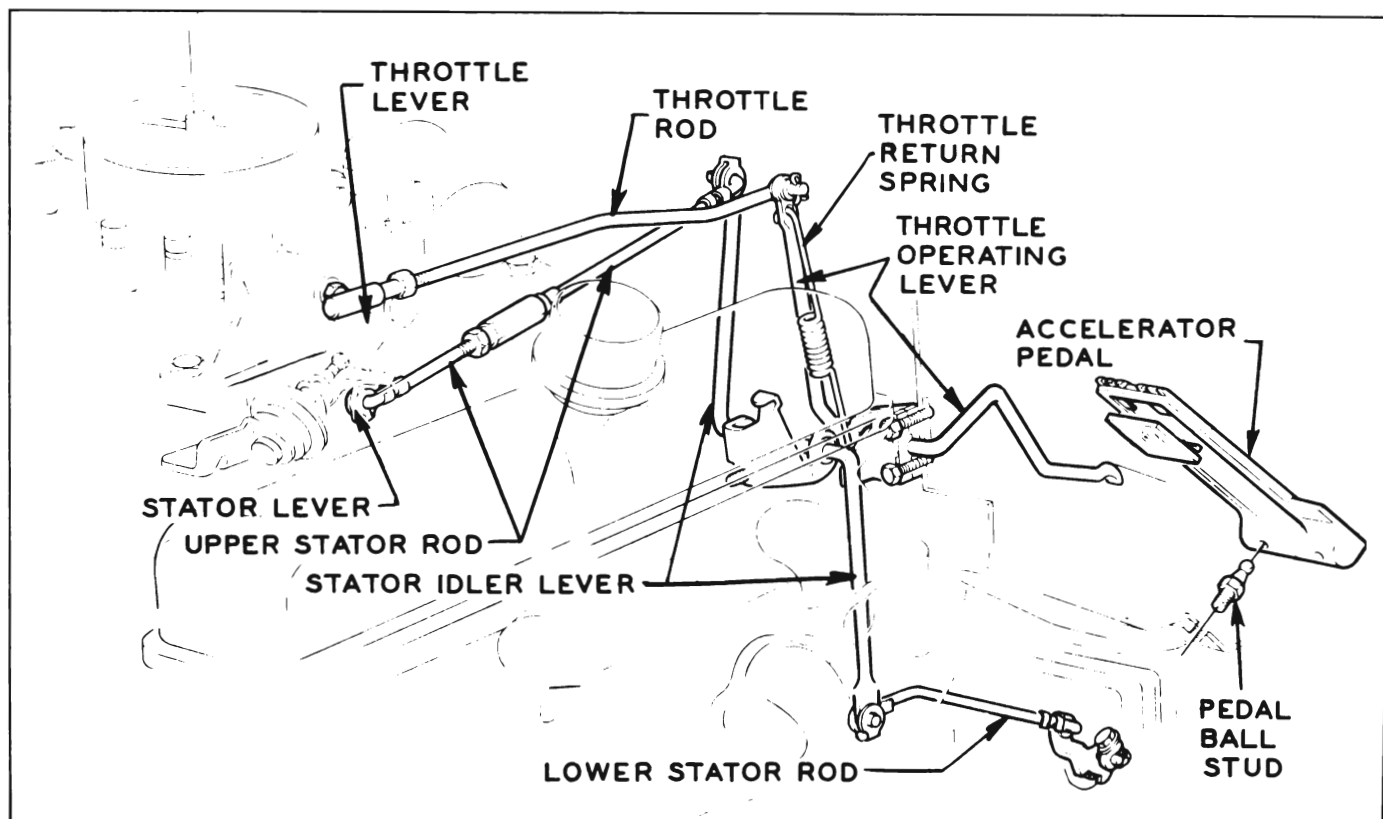


Figure 3-10—Throttle and Stator Control Linkage

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 new cotter pin.

7. Hold choke valve lightly 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 (Rochester 2-Bbl.), 3-21 (Carter), or 3-25 (Rochester 4-Bbl.).

8. 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. Stator Linkage Adjustment**

1. Move upper end of stator idler lever forward and hold against pressure of stator valve spring.

2. Move throttle lever to wide open throttle position. Throttle lever on carburetor should make contact with stator lever just as throttle reaches wide open position.

3. If there is clearance between throttle lever and stator lever, shorten upper stator rod as required by rotating turnbuckle.

4. If wide open throttle causes the stator idler lever upper end to bend farther forward, lengthen upper stator rod as required by rotating turnbuckle.

5. Tighten turnbuckle lock nut and recheck stator linkage as described in steps 1 and 2.

#### **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.

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.

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 GAS TANK OR GAS GAUGE TANK UNIT**

#### **a. Description**

In all series of large cars, two different gas tanks are used. All large cars except estate wagons have a tank which is located in the kick-up area over the rear axle and is held in place with four bolts through the tank flange; estate wagons have a different tank which is located to the rear of the single exhaust system muffler and is held in place with two straps.

A total of four different gas gauge tank units are used. Estate wagons require a separate tank unit because the feed pipe is at a different angle. If the car is equipped with air conditioning, the tank unit must have two pipes—the feed pipe and a vapor return pipe.

#### **b. Removing and Installing Gas Gauge Tank Unit (Except Estate Wagons)**

It is not necessary to remove the gas tank to replace the tank unit as there is an access hole in the trunk shelf through which the tank unit can be removed. Remove the unit as follows:

1. Remove spare tire and wheel.

2. Remove access hole cover screws and pry up access cover.

3. Disconnect gas hose or hoses. Disconnect wire. Remove tank unit retaining screws and remove tank unit.

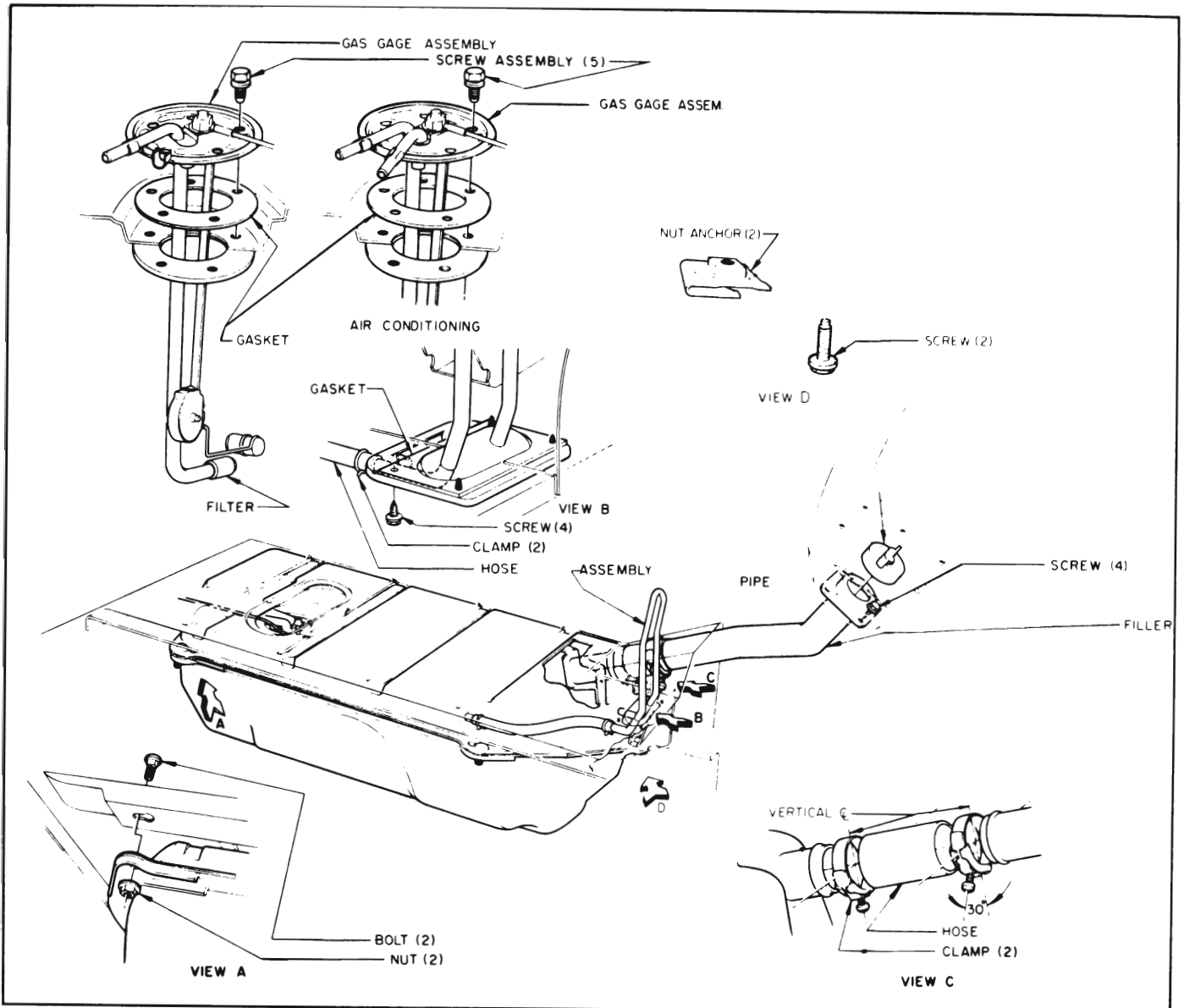


Figure 3-11—Gas Tank Assembly (Except Estate Wagons)

4. Install new tank unit and gasket in reverse order of above steps. Make sure access hole cover has sealing compound around the edge for a water-tight seal.

### c. Removing Gasoline Tank (Except Estate Wagons)

1. Siphon gasoline from tank. A convenient way is to disconnect rubber hose from forward end of steel line along right frame side rail. Then slip siphon hose over end of steel line.

2. Remove muffler - tail pipe assembly as a unit.

3. Loosen bolt in right end of track bar. Remove bolt from left end of track bar and push left end of track bar down out of the way.

4. Remove three bolts which fasten right end of track bar cross member to frame. Remove track bar cross member from car.

5. Disconnect breather hose from breather U-tube in body near upper left side of tank.

6. Disconnect tank filler by sliding hose upward on filler pipe until clear of gas tank. See Figure 3-11.

7. Disconnect gas gauge wire at connector over right frame side rail.

8. Disconnect gas tank hose from rear end of steel line along right frame side rail.

9. Remove two nuts from front edge of tank and two bolts from rear edge of tank. Lower tank.

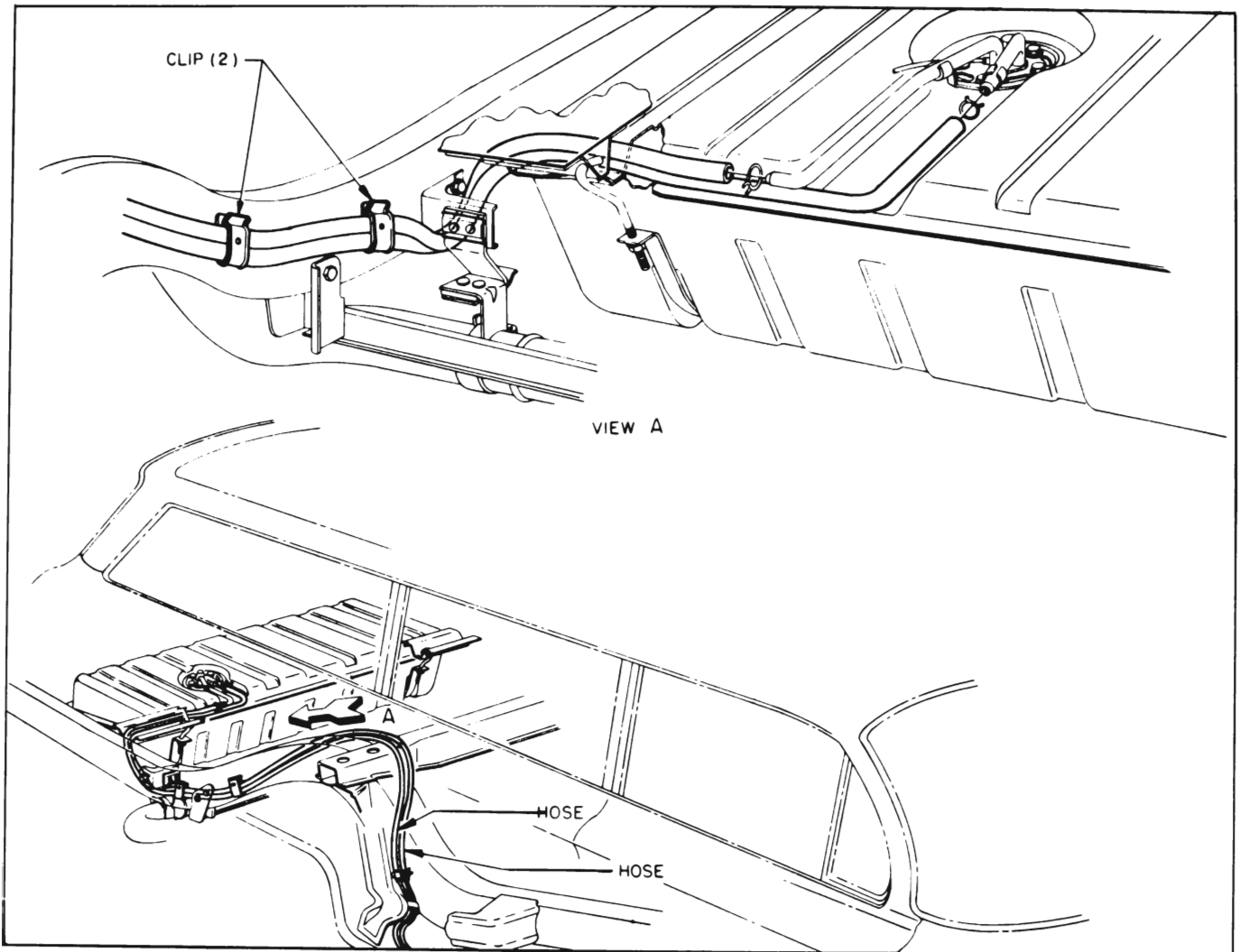


Figure 3-12—Gas Tank And Line Locations (Air Conditioned Estate Wagons)

#### d. Installing Gasoline Tank (Except Estate Wagons)

1. Install gas gauge tank unit in tank. Connect gas hose and gas gauge wire to tank unit. Connect breather hose at upper left side of tank.
2. Raise gas tank into position. Install two bolts in rear edge of tank and two nuts on studs at front edge of tank.
3. Connect gas tank hose to rear end of steel line.
4. Connect gas gauge wire at connector over right frame side rail.
5. Connect tank filler by sliding hose down from filler pipe until hose overlaps equally. Tighten hose clamps.
6. Connect breather hose to forward breather tube.

7. Fasten right end of track bar cross member loosely to frame.

8. Install large bolt through left end of track bar cross member. Tighten right end of cross member to frame bolts to 50 ft. lbs. Tighten track bar bolts to 100 ft. lbs.

**CAUTION:** Car must be at trim height while tightening track bar bolts so that rubber bushings will be in a neutral position.

9. Install muffler - tail pipe assembly.
10. Lower car and check gas gauge for correct empty reading.
11. Fill gas tank and again check gauge reading. Check for gasoline leaks.

#### e. Removing and Installing Gasoline Tank (Estate Wagons)

Estate wagon gasoline tanks are located in a completely different location—to the rear of

the muffler. See Figure 3-12. Therefore, it is not necessary to remove any other parts before removing the gas tank. The tank is held in place by two straps and two nuts. This tank has no separate vent pipe, but is vented by two

notches at the top edge of the filler neck.

On the estate wagon, the gasoline tank must be lowered to remove and install a gas gauge tank unit.