CHEVROLET

SERVICE NEWS

VOLUME 33 | JANUARY, 1961 | NUMBER 1

CONTENTS

ENGINE POSITIVE VENTILATION EQUIPMENT

Positive crankcase ventilating equipment available for use on all Chevrolet engines acts to effectively remove harmful, oil contaminating, vapors from the crankcase, thus preventing corrosion and sludge formation.

This type of engine ventilation equipment is especially valuable on vehicles used continuously in heavy duty short hauling or door to door delivery operations, as well as for stop and go city driving.

Positive crankcase ventilation is accomplished by utilizing manifold vacuum to draw off crankcase vapors. Fresh air then enters the crankcase through the crankcase breather cap or, when installed, through a tube from the the air cleaner. A vacuum valve, the only moving part of the system, regulates the rate of ventilation to meet operational requirements.

On most installations of this ventilating equipment, air is drawn into the engine through the crankcase breather cap, however if vehicles are operated in areas where air-borne foreign material is excessive, a clean air intake from the air cleaner may be used. Because of slow road speeds and dust encountered in heavy duty truck off-highway operations, all heavy duty trucks are production equipped with a positive crankcase ventilating system which includes a clean air intake from the air cleaner to the crankcase. The clean air intake protects cylinder walls, main and connecting rod bearings, piston rings and other moving parts against the rapid wear which could result from excessive dust being drawn into the crankcase and circulated by the engine oiling system.

NOTE: *Ventilating systems incorporating the clean air intake from the air cleaner to the engine have been designated "Positive Crankcase Ventilation Systems." Those systems which do not incorporate this air intake, but instead make use of the regular crankcase breather cap, are designated "Special Crankcase Ventilation Systems." The latter systems are intended specifically for use in states whose laws require such equipment on all vehicles. Since both systems provide increased ventilation, the term "Positive Crankcase Ventilation System" will be used herein to refer to both "Positive" and "Special" systems.*

When positive crankcase ventilating equipment is installed in a Chevrolet engine, an extra quantity of air is permitted to enter the intake manifold below the carburetor. In some cases this will result in a leaner air-fuel ratio than is desirable in the engine. Since this is not always the case, no change in carburetion should be made unless definite indications of lean mixture are present. If such indications are experienced, one step rich main metering jets may be used in the carburetor.

To assure proper operation of the system, it is

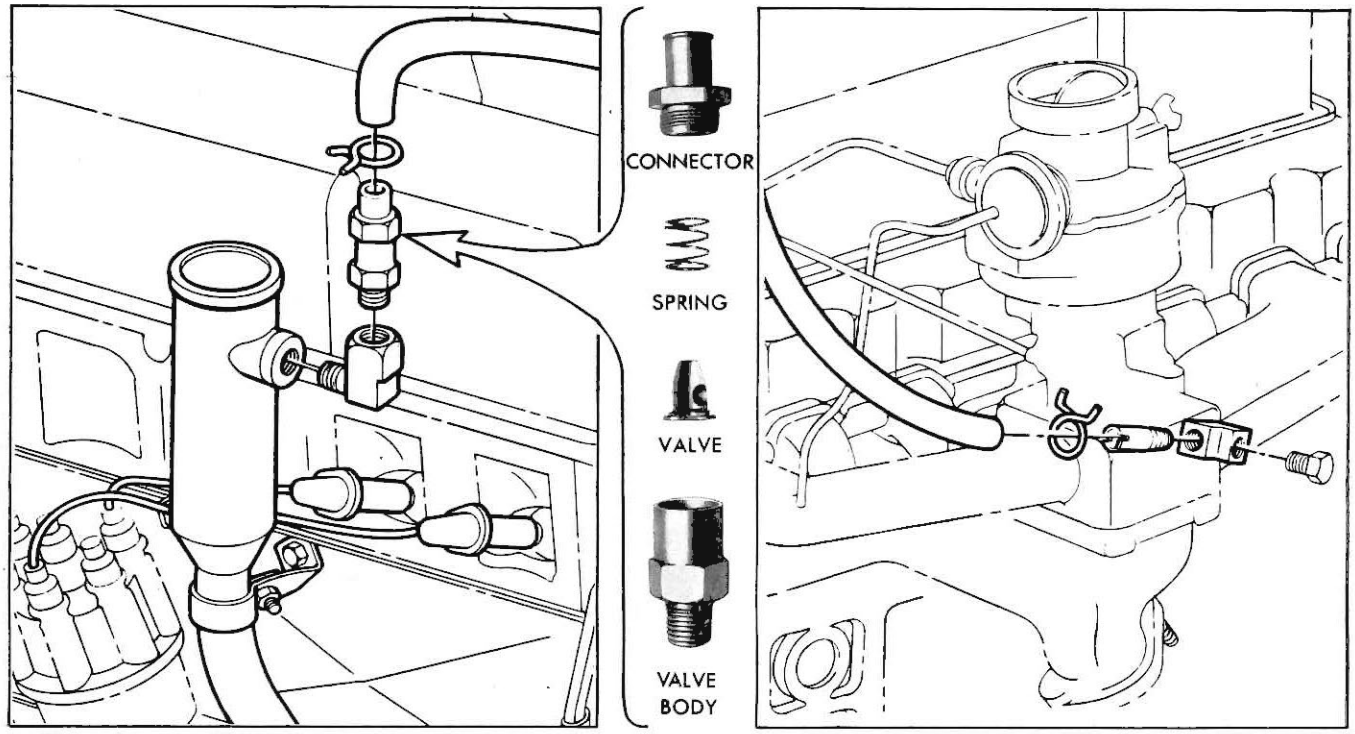


Fig. 1—L-6 Engine Crankcase Positive Ventilation

very important that the crankcase oil level be maintained at the proper level and not overfilled.

Improper operation of the vacuum valve may cause erratic engine operation and may show up as any of the following troubles:

1. Engine stalls frequently after slow or quick stops. After restarting, the engine runs rough, with typical lean idle fuel mixture.
2. Engine loss of power and surging at speeds above idle.
3. Considerable black smoke at tailpipe. Engine has typical rich rolling idle.
4. Idle rpm speed fluctuates but engine does not stall.

INSTALLATION

On Six Cylinder Engines

The most common positive ventilation system installed on the L-6 engine (passenger and truck) has the ventilation vacuum valve located on the ventilator assembly at the right side of the engine. The hose is clamped to the valve, routed across the top of the engine, and clamped to a connector on the manifold just below the carburetor (Fig. 1).

A second installation is basically the same but has a metal tube running between the vacuum valve and the connection to the manifold (Fig. 2). This necessitates a slightly different valve incorporating female threads rather than a hose clamp connection. Interior construction and assembly procedures are the same for both valves. This installation also features a clean air intake from the air cleaner to the engine.

On V-8 Engines

Most 283 cu. in. and 348 cu. in. V-8 engines (passenger and truck) make use of the same basic positive crankcase ventilating system. In each case,

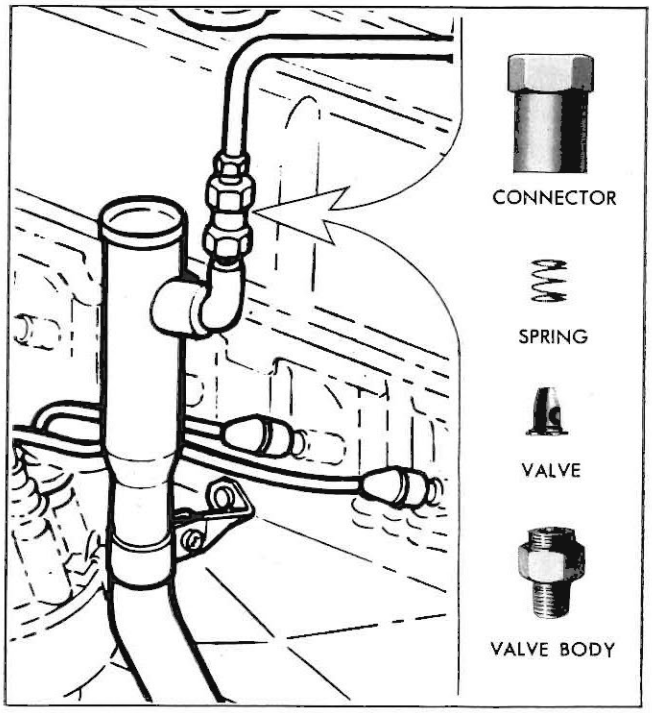


Fig. 2—Vacuum Valve Assembly on L-6 Engines

the vacuum valve is screwed into the adapter which replaces the regular crankcase ventilator tube. The tubing is clamped to the valve and to a connector located: at the rear of the two barrel carburetor (Fig. 3), at the rear of the center carburetor on triple two barrel carburetor installations (Fig. 4), at the rear of the front carburetor on Corvette dual four barrel installations (Fig. 5), at the rear of the carburetor on four barrel high performance and special high performance engines (Fig. 4), and to the adapter outlet at the front of single four barrel installations (Fig. 3). Tbese installations all draw fresh air into the engine through the crankcase breather cap.

Certain heavy duty vehicles differ somewhat from the above description in that the vacuum valve is located at the carburetor (Fig. 6) ratber than at an adapter at the rear of the engine. The vacuum valve has the threaded connection on the front end (toward the carburetor) rather than the rear end (toward the adapter) as was the case in systems described in the previous paragraph. These installations having the vacuum valve located adjacent to the carburetor, also provide a clean air intake from the air cleaner to the engine.

Since two different vacuum valves are used in V-8 engines, there is the possibility that the wrong valve may be installed. Illustrations in this issue therefore detail the assembly and installation of the correct valve for each engine.

On Corvair Engines

Corvair engines, as shown in Figure 7, achieve crankcase ventilation by replacing the regular production ventilator tube with a special metal tube which extends up through the top of the engiue shroud. The flexible tubing is clamped to this metal tube and to a connection on the right hand air cleaner case. Craukcase vapors are thus drawn through the air cleaner and carburetor to the right hand manifold. No ventilation valve is used in the Corvair system.

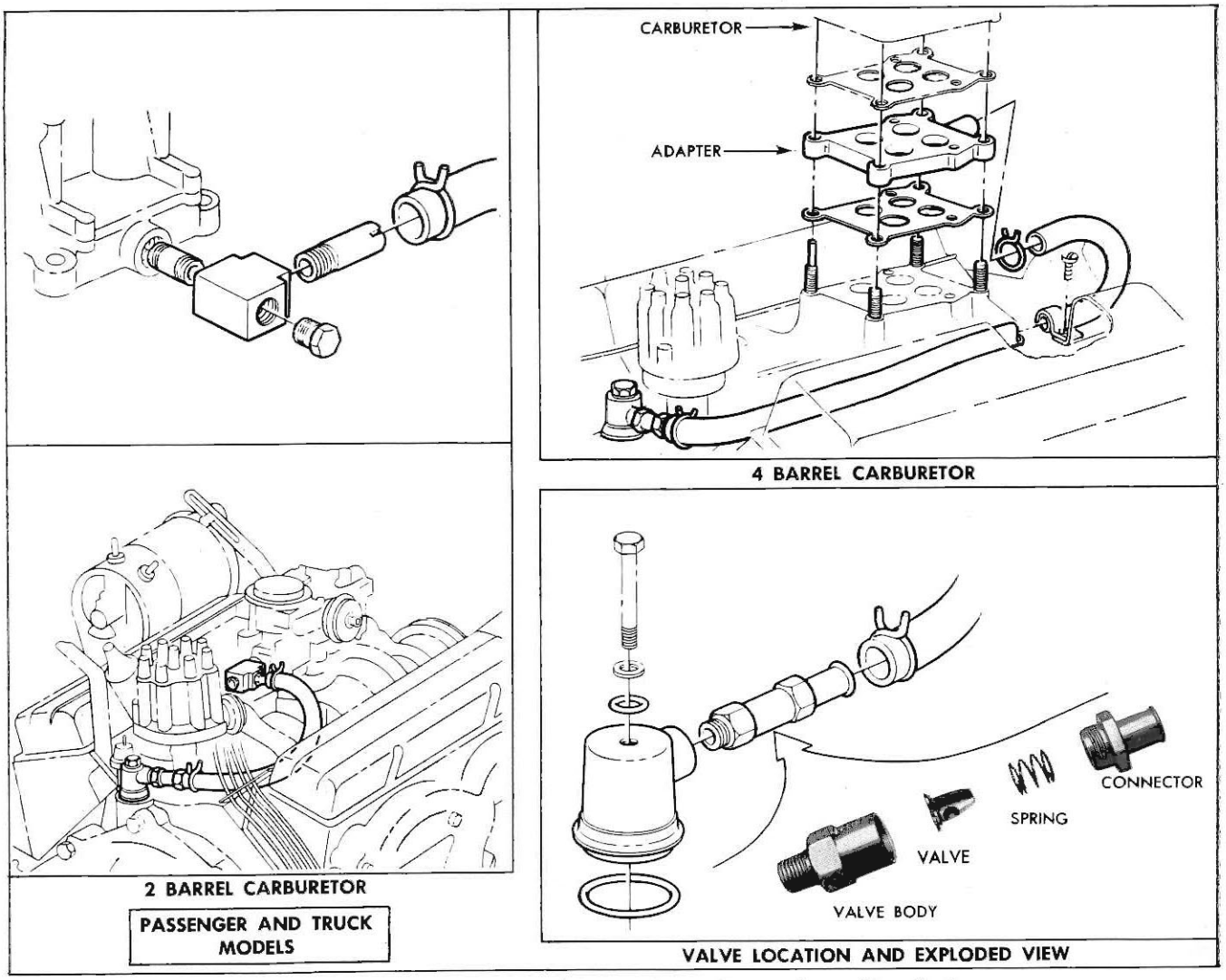
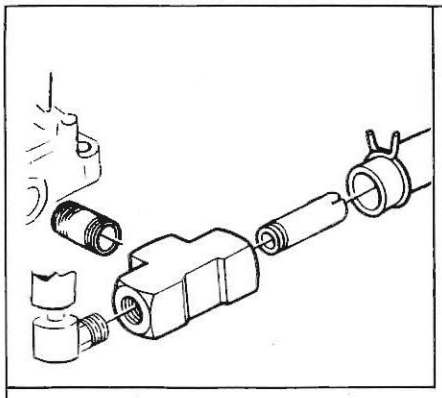
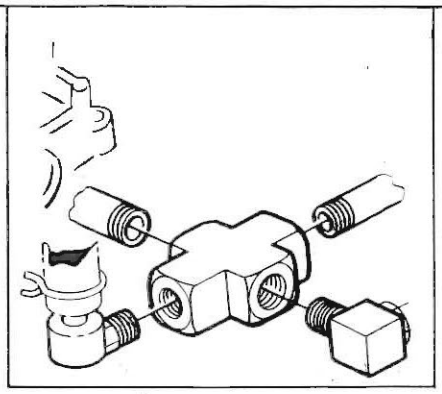


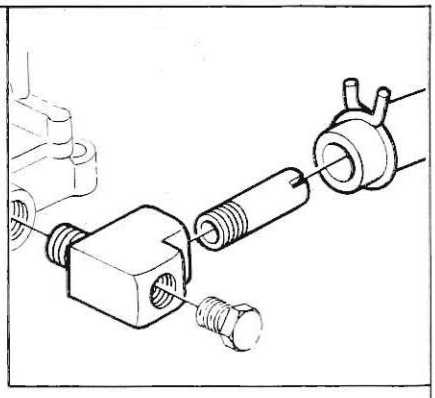
Fig. 3—283 V-8 Passenger & Light Duty Truck—Crankcase Ventilation



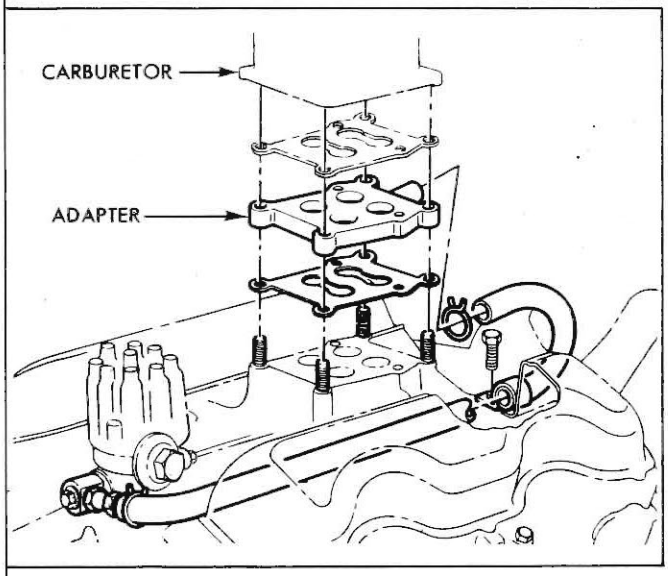
3 x 2 CARBURETOR



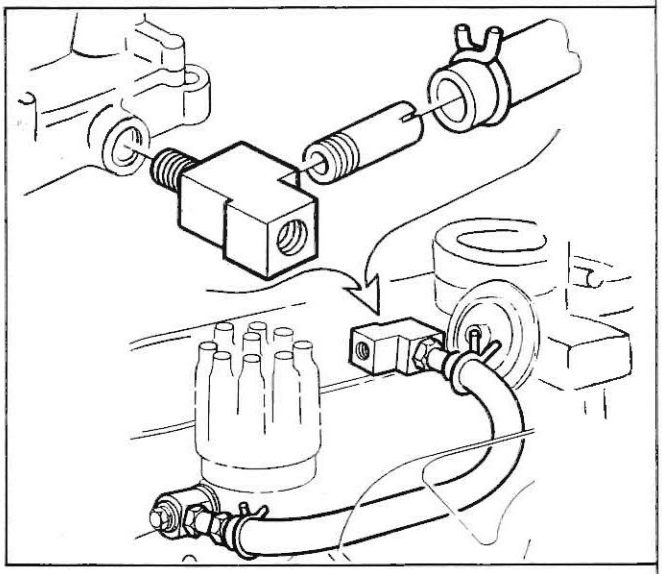
3 x 2 CARBURETOR WITH AUTOMATIC TRANSMISSION



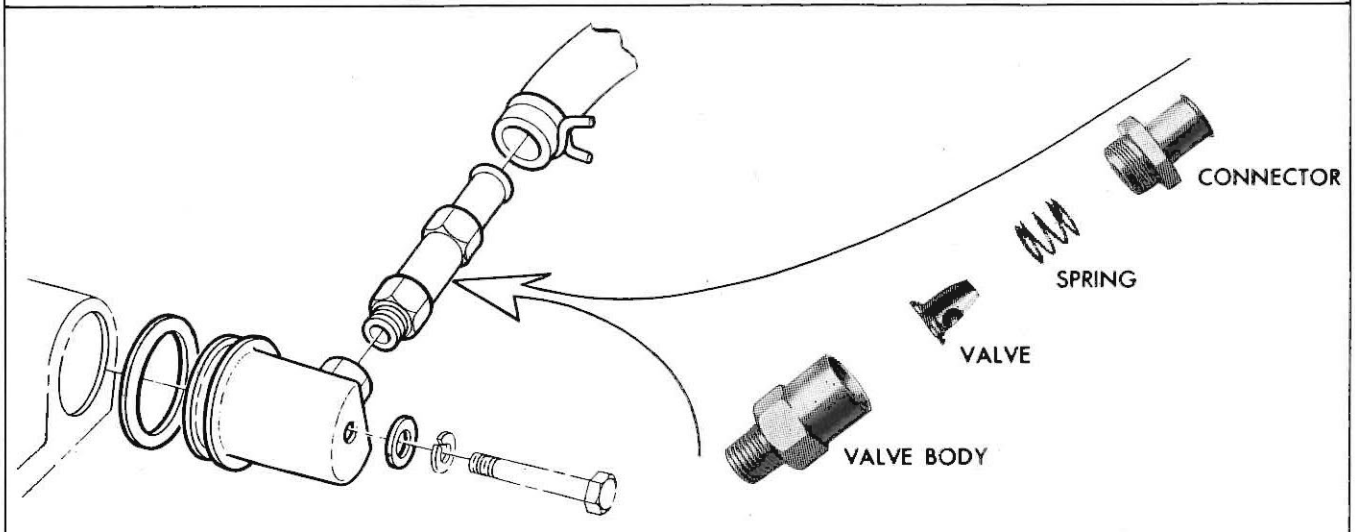
4 BARREL CARBURETOR WITH HIGH PERFORMANCE ENGINE



4 BARREL CARBURETOR



2 BARREL CARBURETOR (TRUCK MODELS ONLY)



VALVE LOCATION AND EXPLODED VIEW

Fig. 4—348 V-8 Passenger & 2 BBL. Carb. Truck—Crankcase Ventilation

On Corvette Engines (With Fuel Injection)

This system is basically the same as found on the 283 cu. in. engine. The ventilation valve is located at the adapter at the rear of the engine. Tubing, clamped to the valve, runs to the connector on the fuel injection nnit.

SERVICE OPERATIONS

Positive crankcase ventilation system components are subject to fouling by sludge and carbon formation caused by the impurities in the vapor removed from the crankcase. Therefore, at regular intervals of 10,000 miles or less, depending on operating conditions, all system components, vacuum valve, adapters, pipe or tubing and fittings should be removed, disassembled and cleaned thoroughly.

NOTE: *More frequent service of these components is necessary when the vehicle is operated under cold weather conditions or at slow speeds. Under such conditions, more concentrated accumulations of harmful fumes may be present in the engine.*

Disassembly and Cleaning

Remove the vacuum valve, tubing, connectors and adapters from the engine.

Disassemble the valve. Disconnect all system components. Clean all valve parts and other components with a good solvent cleaner and blow dry with compressed air.

Inspection

Check all parts for dirt or a clogged condition. Clean if possible or replace. Check valve components for bent, broken, distorted or corroded condition. Replace the valve if any parts are damaged.

On six cylinder engines, remove the ventilator tube and inspect for sludge accumulation. Burn clean if necessary. Make sure all holes in baffle inside of ventilator tube are open. Check that crankcase breather cap is clean.

When fresh air tube from air cleaner is used, check crankcase filler cap and gasket for sealing and replace gasket if necessary.

Assembly

When assembling the valve, it is extremely important to properly attach the spring on the valve. Push the end coil over the tapered end of the valve, over the ridge and into the groove machined just under the head of the valve. Unless this spring

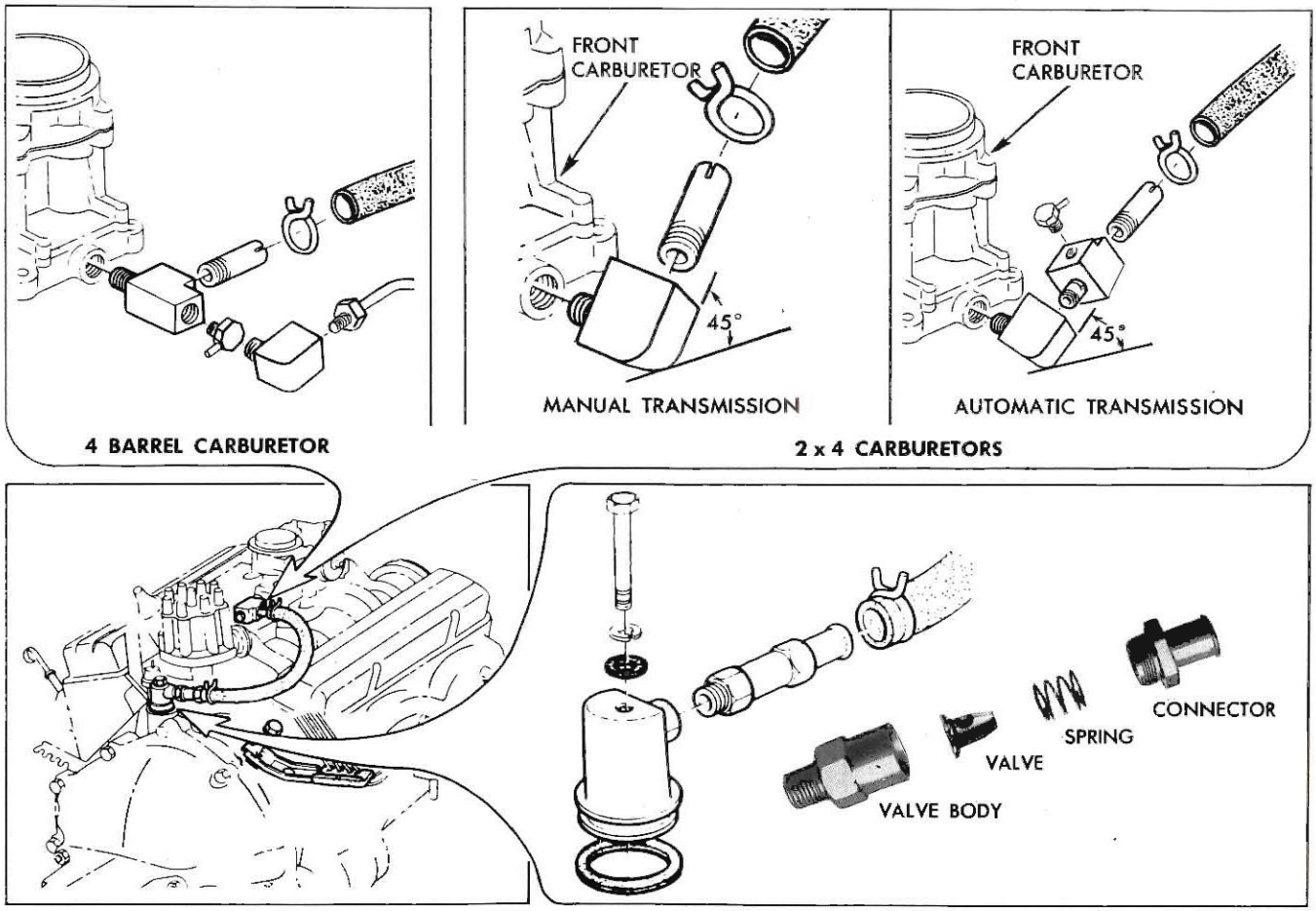


Fig. 5—Corvette Crankcase Ventilation

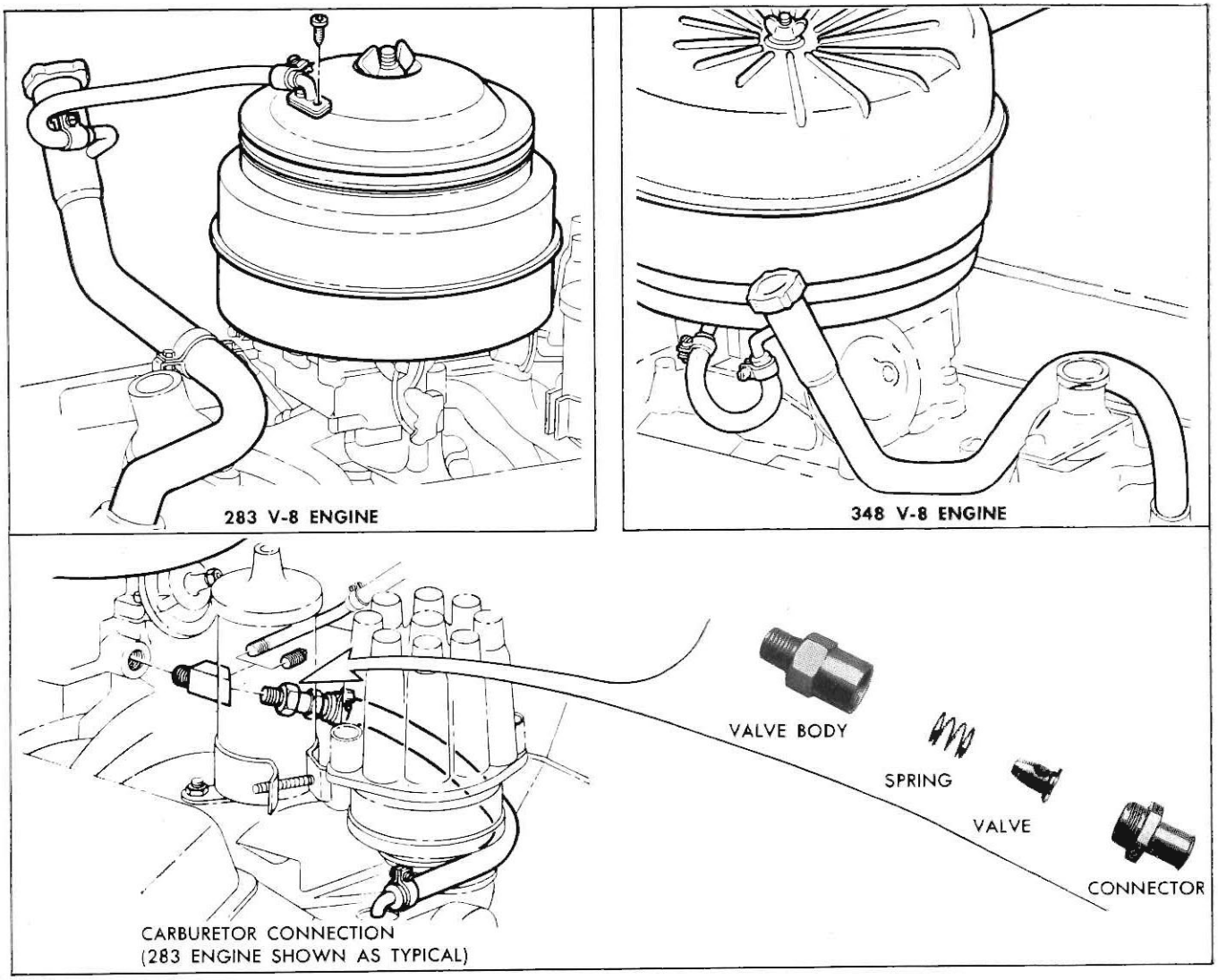


Fig. 6—Truck—Heavy Duty 283 &348 Engine Crankcase Ventilation

is installed correctly, the valve will not contact the valve seat squarely and the valve will not close properly. Consequently, the engine will not idle properly because of too much air entering the manifold. If the spring has been stretched, the same trouble may occur.

The valve and spring assembly must be installed in the valve body so that the spring will be toward the vacuum source (carburetor or manifold) when all components are reinstalled on the engine. If it is installed backward, the valve will not open.

Adjusting 1961 Valve Lifters

Effective with the start of 1961 Production on 283 and 348 cu. in. V-8 engines and on October 4, 1960, for Corvair engines, long travel lifters were incorporated. The term "long travel" refers to the available lifter plunger travel between the bottomed length and the extended length. Effective with this change, the available lifter plunger travel was changed from approximately 1/8" to the present travel which is slightly in excess of 3/16" on most new design lifter assemblies.

Because of the increased travel of the new valve lifter assemblies, it is necessary that new valve lash adjustment be adopted. The long travel lifters must have the rocker arm adjusting nut turned-down two (2) turns from the point where there is no push rod end play.

If only one (1) turn is used on rocker arm nuts in V-8 engines incorporating long travel lifters, rocker arm stud cutting would likely result. On 1961 Corvairs, with long travel lifters, valve lifter noise and slow lifter "build-up" would be objectionable if these lifters were not adjusted to the two (2) turn setting. Conversely, if short travel lifters are adjusted to two (2) turns, the lifters would bottom out preventing the valves from closing.

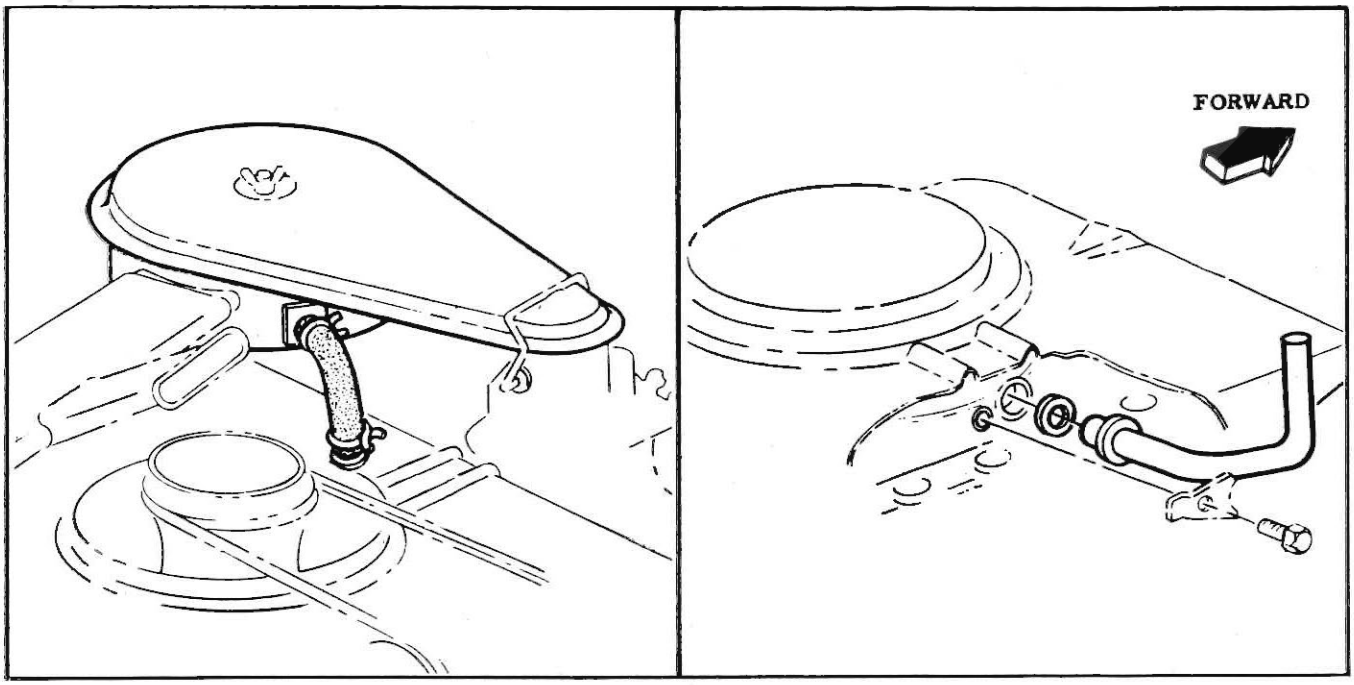


Fig. 7—Corvair Crankcase Ventilation

It is, therefore, very important to properly identify the type of valve lifter installed in a particular engine, prior to adjusting the valves. There are three (3) methods that can be used depending on the specific situations: (1) Production Data, (2) Inspection After Dis-assembly and (3) Trial Adjustment.

Production Data—The long travel lifters are used in all 1961 vehicles equipped with 283 and 348 cu. in. V-8 engines. These lifters entered production in 1961 Corvair engines effective October 4, 1960, on engines Serial #T-1004.

NOTE: *235 and 261 cu. in. Six Cylinder engines do not use long travel lifters—there is no change in design of lifters used on L-6 engines.*

Inspection—If the hydraulic lifters have been removed from the engine, long travel lifters may be identified as follows:

Lifter Part No.	Engine	Lifter Identification
5232100	283, 348, Turbo-Air	1 hole body, 1 hole plunger, push rod seat—steel color, plunger retainer—copper plated.
5232110	283, 348, Turbo-Air, Super Turbo-Air	1 hole body, 6 hole plunger, push rod seat—copper plated, plunger retainer—copper plated.
3789175	283, 348, Turbo-Air	1 hole body, 6 hole plunger, 2 grooves at top of body.

The push rod seat on all long travel lifters is shallower (has less depth) than seats on short travel lifters.

Trial Adjustment—If in doubt as to whether an engine is equipped with long travel lifters, proceed as follows: Lash all valves initially with one turn. Then make trial adjustment, tightening one valve at a time to 2½ turns (1½ additional). If engine runs smoothly after lifter has had time to adjust itself, the lifter is a long travel lifter and should be readjusted to 2 turns; conversely, rough idle indicates short travel lifters and should be readjusted to one (1) turn.

NOTE: *Due to the difference in adjustment and operating characteristics, the short travel and the long travel lifters should never be mixed in the same engine assembly.*

Hydraulic Lifter Adjustment

On all vehicles incorporating Original Production design (or Service equivalent) hydraulic lifters, valve lash should be adjusted in accordance with Chevrolet Shop Manual procedures, except that rocker arm nut turn-down from point of either no push rod end play or disappearance of "clatter" should be as follows:

Engine	1955-1960	1961
L-6	1 ½ Turn	1 ½ Turn
283—V-8	1	2
348—V-8	1	2
Corvair	1	Prior to T-1004-1 T-1004 & later-2

Adjusting Wiper Blade Park

1961 Passenger Car windshield wiper arm assemblies incorporate an adjusting screw on the arm base (Fig. 8). This screw provides a means of

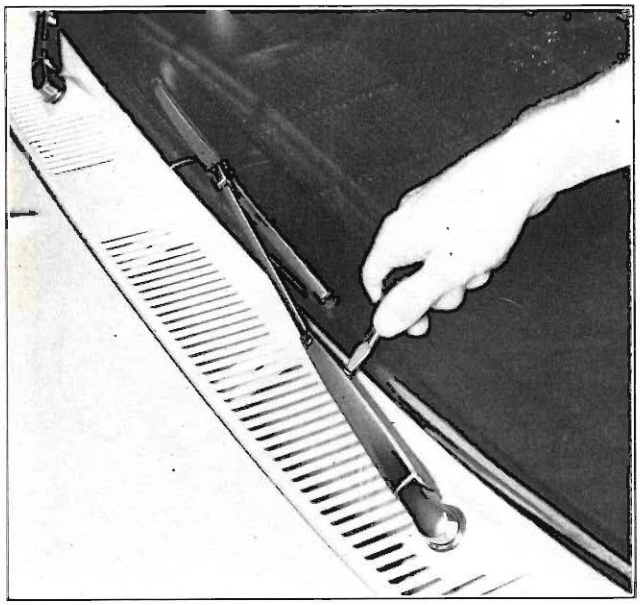


Fig. 8—Adjusting Wiper Blade Park

pivoting the arm extension, at the arm base, to achieve more precise adjustment of wiper blade position at park. By turning this screw, wiper blade park position may be improved and cases of blade hop-over onto the windshield rubber channel will be eliminated.

1961 Corvair Engine Surge

If objectionable engine surge occurs on 1961 Corvair vehicles equipped with carburetors listed below, the following carburetor modifications are recommended:

Carburetor No. 7019100—Used on Turbo-Air engines (w/Powerglide).

Correction consists of replacing the existing Main Metering Jet with Jet No. 7002650, and replacing the Venturi Cluster with Cluster No. 7020344. This increases the jet size from .049" to .050" and the idle restriction from .030" to .032". Enriching the fuel flow may slightly affect economy.

Carburetor No. 7019107—Used on Super-Turbo Air engines (W/Synchro. Trans.).

The same basic method of eliminating surge, which was described above, applies to the 7019107 carburetor, however it is also necessary to replace the existing Venturi Cluster Gasket and add a Main Well Insert when installing the new Jet and Venturi Cluster.

Parts involved in modification of the 7019107 carburetor are shown below:

PART NAME	REMOVE	INSTALL
Venturi Cluster	3019496	7020342
Cluster Gasket	7019652	7020195
Main Metering Jet	7002650	7002651
Main Well Insert	.....	7009212

1961 CHEVROLET SPARK PLUG USAGE

VEHICLE & ENGINE	NORMAL SERVICE PLUG (Original Equipment)	COLDER PLUG (For Continuous Heavy Duty Operation)	HOTTER PLUG (For City Type Operation)
Passenger—235 cu. in & 283 V8	AC 44	AC C43 Com.	AC 45 or AC 46
Passenger—348 V8 W/Standard Cam (Includes 3 X 2 Carburetor Engines Except "FH", "FJ", & "GD")	AC 44N (¾" Reach)*	AC 43N (¾" Reach)*	———
Passenger—348 V8 W/Hi-Lift Cam (Incl. 3 X 2 Carburetor Engines Serial Suffix "FH", "FJ", & "GD")	AC 43N (¾" Reach)*	AC C42N Com. (¾" Reach)*	AC 44N (¾" Reach)*
Corvette—283 V8 (Incl. Fuel Injectian)	AC 44	AC C43N Com. (HD) AC C42-1 Com. (Road Racing)	AC 45 or AC 46
Corvair & Corvair "95"	AC 46FF (½" Thread)**	AC 44FF (½" Thread)**	———
Truck—10, 20, 30, 40, & 50 Series—235 cu. in. & Light Duty 283 V8	AC 44	AC C43 Com.	AC 45 or AC 46
Truck—60 Series 261 cu. in. & Heavy Duty 283 V8	A C C42-1 Com.	———	AC C43 Com.
Truck—70 & 80 Series 348 V8	AC C42 Com. (¾" Reach)*	———	AC 43N (¾" Reach)*

*This plug has a longer reach to compensate for the water jacket which encircles the plug base, and is identified by the suffix "N".

**This plug has a ½" threaded length becouse of its use in an aluminum head—cast iron heads use ⅜" threaded length plugs.