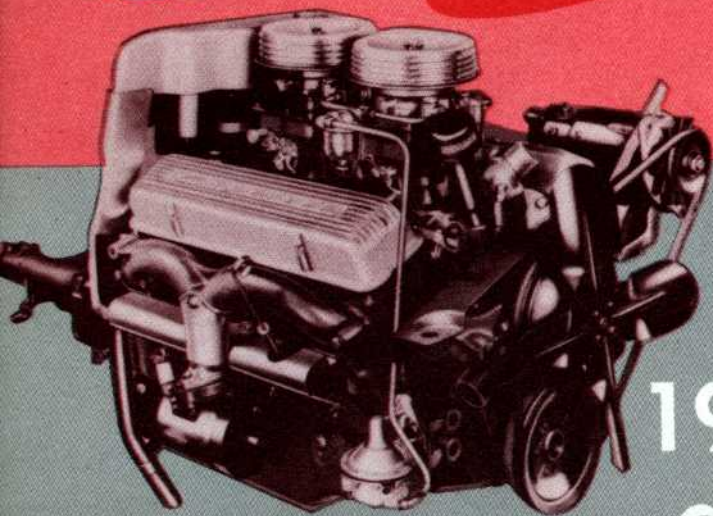


# Corvette

## ENGINE TUNE-UP



1956  
and  
1957

## FOREWORD

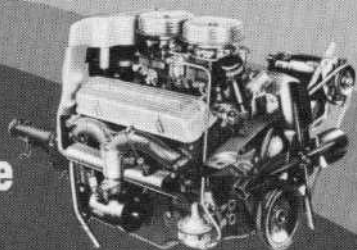
This booklet contains a complete review of the discussion slidefilm, *Corvette Engine Tune-up*.

Keep at least one copy of this booklet in the Service Department File of Technical Information.

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**Tuning a Corvette  
engine  
is where precision craftsmanship  
really pays off in  
performance.**



**In 1956, the following Corvette engines (all of 265-cubic inch displacement) were available —**

HORSEPOWER	COMPRESSION RATIO	FUEL SYSTEM	VALVE LIFTERS
210	9.25 to 1	Single 4-B Carb.	Solid
225	9.25 to 1	Dual 4-B Carb.	Solid

**In 1957**

the following Corvette engines,  
(all of 283-cubic inch displacement) are available —

HORSEPOWER	COMPRESSION RATIO	FUEL SYSTEM	VALVE LIFTERS
220	9.50 to 1	Single 4-B Carb.	Hydraulic
245	9.50 to 1	Dual 4-B Carb.	Hydraulic
250	9.50 to 1	Fuel Injection	Hydraulic
270	9.50 to 1	Dual 4-B Carb.	Solid
283	10.5 to 1	Fuel Injection	Solid

The foregoing Corvette engines have also been made available in certain passenger car models. Tune-up specifications for any Corvette engine are exactly the same whether installed in a Corvette or a passenger car.

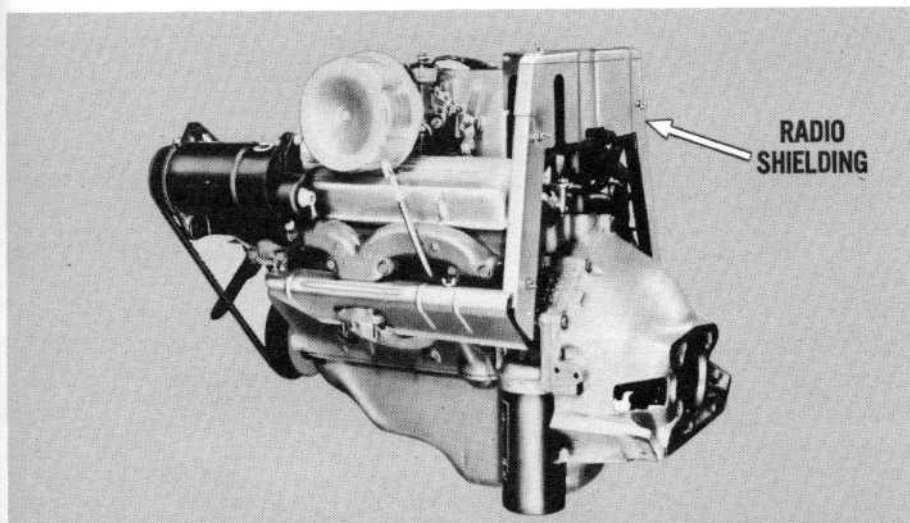
Following are the tune-up specifications which apply especially to Corvette engines, to be discussed under the basic areas of

**COMPRESSION**

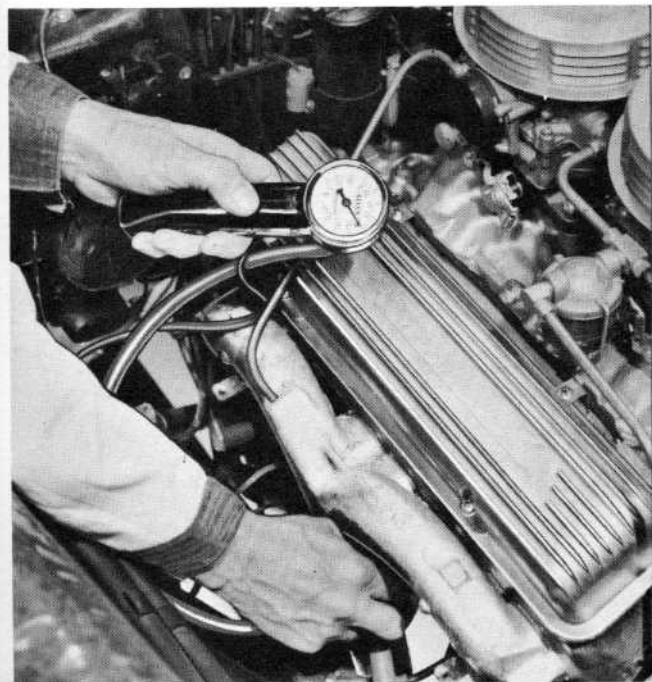
**IGNITION**

**FUEL SYSTEM**





**On Corvette, a preliminary step to removing spark plugs or working on the ignition system is to remove the radio shielding (secured by wing nuts).**



## **COMPRESSION**

**Remove the spark plugs, loosening the plugs first and running the engine briefly to blow out carbon. Then check compression pressure of each cylinder.**

Compression pressures should be —

ALL 1956 ENGINES AND  
1957 ENGINES WITH  
HYDRAULIC LIFTERS

**160 pounds**

1957 ENGINES WITH  
SOLID VALVE LIFTERS

**140 pounds**

Not more than 20 pounds extreme variation  
between cylinders is permissible.

CYLINDER NO.

1

3

5

7

LEFT BANK

160

165

155

170

CYLINDER NO.

2

4

6

8

RIGHT BANK

170

**130**

165

160

Naturally, one or more low reading cylinders will cause uneven engine operation, and the condition must be corrected before proceeding with the tune-up. Check out the exact cause of the trouble in the usual way.

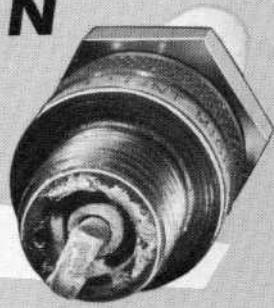
CYLINDER NO.	1	3	5	7
LEFT BANK	160	165	155	170
CYLINDER NO.	2	4	6	8
RIGHT BANK	170	<b>190</b>	<b>190</b>	160

Also undesirable are very *high* readings, which result from heavy carbon or lead deposits. This condition can cause harmful detonation and should be corrected before proceeding with the tune-up.

## IGNITION



**COLD**



**HOT**

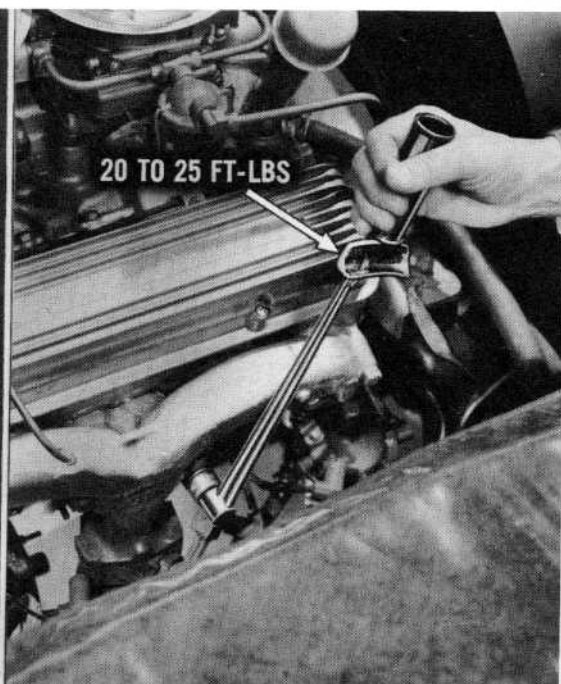
Check all spark plugs as removed from the cylinders for signs of "COLD" operation (heavy, black carbon deposits) or for "HOT" operation (glazed or blistered appearance). If either condition exists, replace with hotter or colder plugs as required.

Following are the recommended spark plugs for various driving conditions —

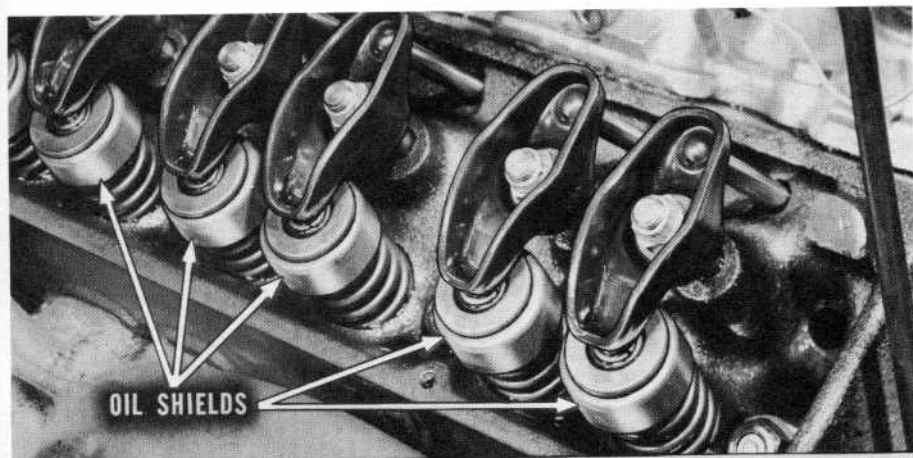
CITY	AC-46
TOWN AND COUNTRY	AC-44
HEAVY-DUTY AND HIGH SPEED	C-43 COMM.
EXTENDED HIGH-SPEED OPERATION	C-42-1 COMM.

Plugs should be matched to the owner's major driving requirement. All must be of the same heat range and have about the same number of service hours to provide balanced performance.

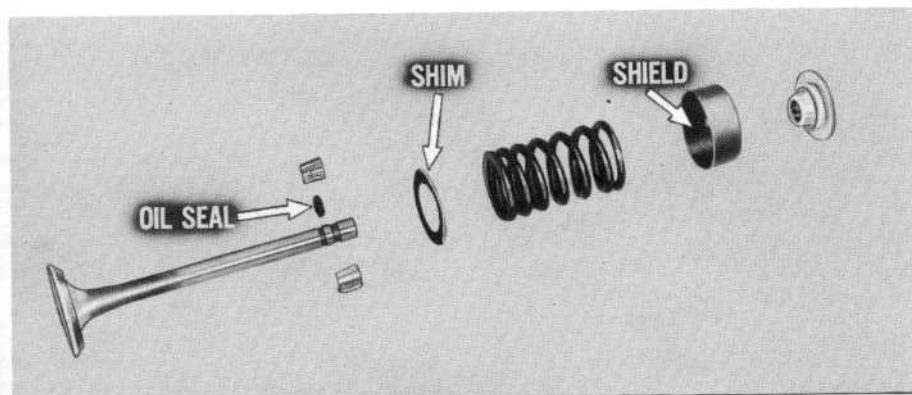
If spark plugs are in good condition, clean and gap to .035". Use new gaskets when installing plugs and tighten to 20 to 25 foot-pounds to provide best heat dissipation. Be sure threads in cylinder head are clean so torque readings will be accurate.



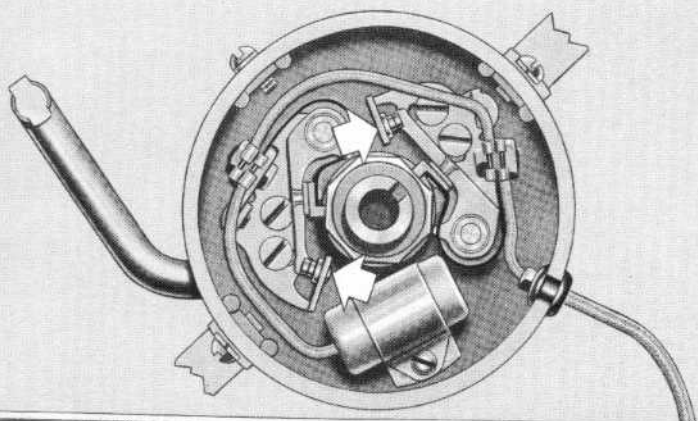




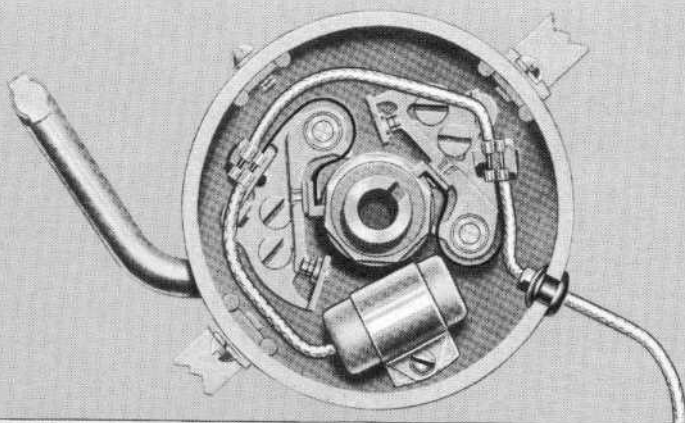
On early 1956 engines with dual carburetors operated in slow city traffic, it may be necessary to install valve spring oil shields in addition to changing to AC-46 spark plugs to correct plug fouling.



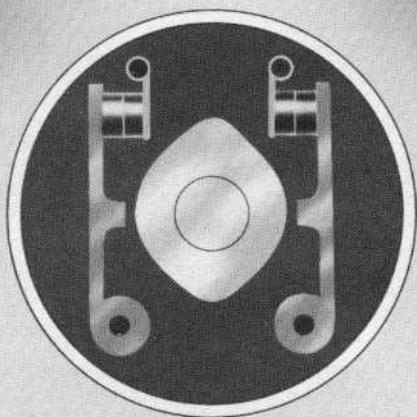
Remove the cylinder heads and remove the valve spring retaining components. Discard the 1/16-inch shim under each spring. Place an oil shield over each spring and assemble in the usual way, making sure valve stem oil seals are in good condition.



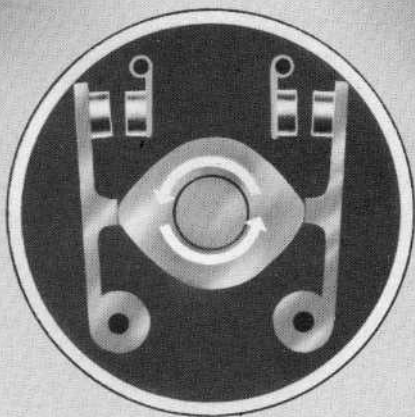
Several Corvette engines are equipped with a dual-point distributor, which permits flatter cam lobe contour and therefore reduces point bounce at the very high RPM attained by Corvette engines.



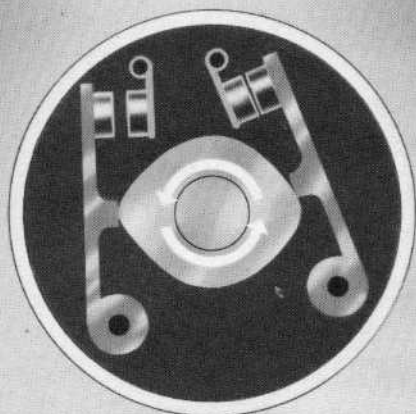
The two sets of points in the Corvette distributor are connected to a common electrical lead. Therefore, as long as either set is closed, current is flowing through the coil. Following is the principle of operation—



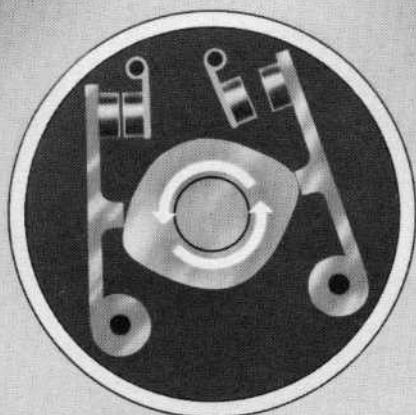
To simplify the demonstration, let's reduce the number of cam lobes from the actual eight to two. Now, if the points were located exactly opposite, as shown here—



—both sets of points would open and close at exactly the same time as the cam rotated, and there would be no advantage over the conventional single-point distributor. However—

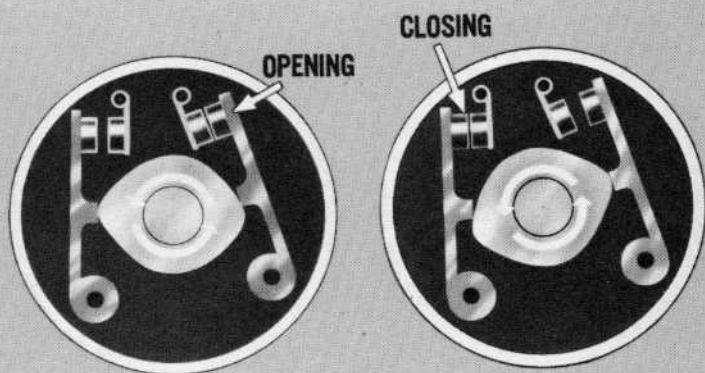


—if one set of points is moved slightly away from opposite, in the direction of cam rotation, it will open later than the other set and therefore provide a longer period of coil saturation.

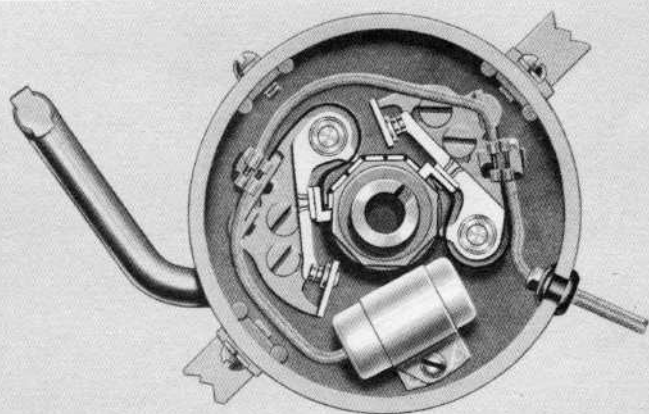


The set of points on the left, in the original position, will close sooner than the set on the right as the cam rotates, and therefore start coil saturation sooner after each plug is fired.





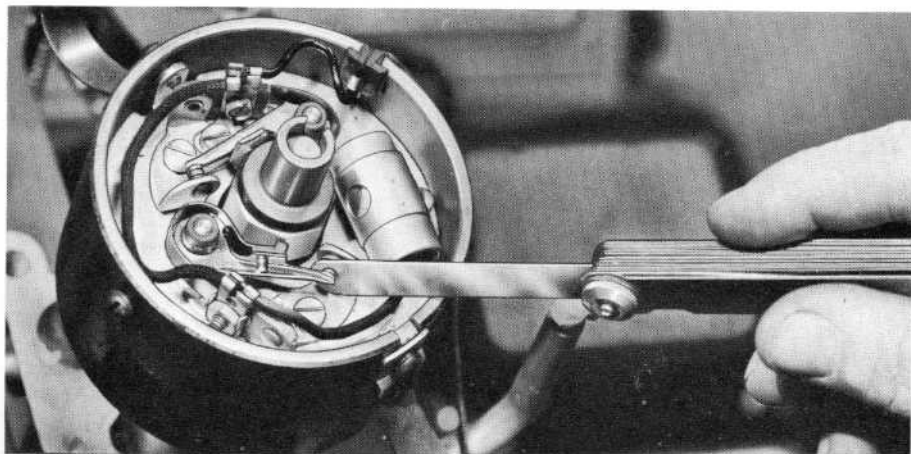
Thus, with one set of points opening the coil circuit and the other closing the coil circuit, an adequate period of coil saturation is provided with flatter cam lobes than are possible in a single-point distributor.



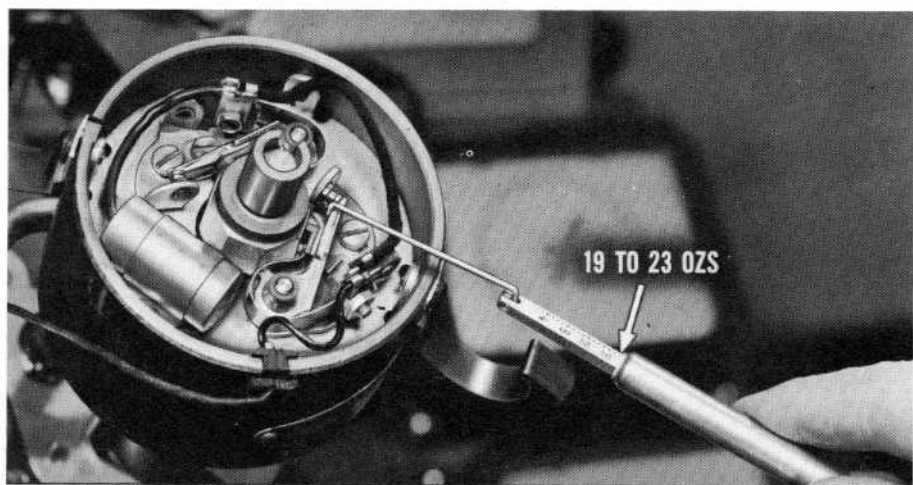
In the actual distributor, the points are spaced three cam lobes apart instead of approximately opposite. This provides room for the condenser, and does not change the basic principle of operation we have just seen.



Servicing the Corvette distributor is very simple. You may wish to remove the distributor from the engine and mount it in a tester. Or, all necessary steps can be performed easily on the engine.

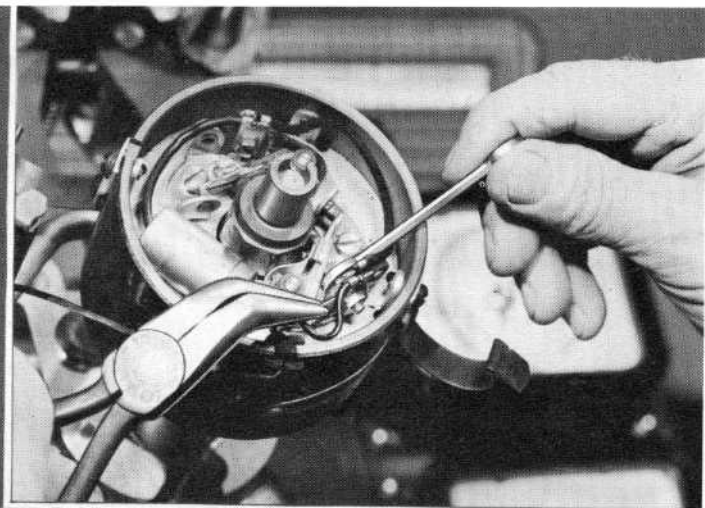


Inspect the point contact surfaces and replace points if necessary. Clean and align points. Adjust the point gap to .014" for used points and .018" for new points as an initial setting. Test the condenser.



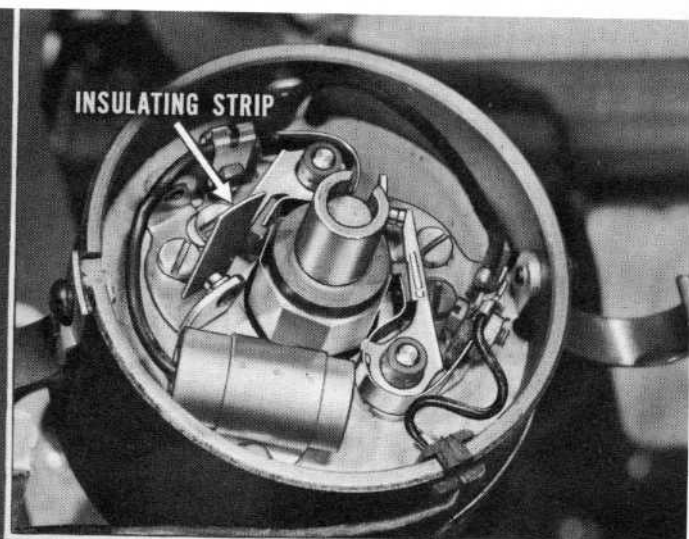
Check the breaker arm spring tension of each set of points with cam follower between lobes of cam. Tension range is 19 to 23 ounces. If more or less, adjust as follows—

Loosen the primary lead retaining nut on the stationary point. Shift the

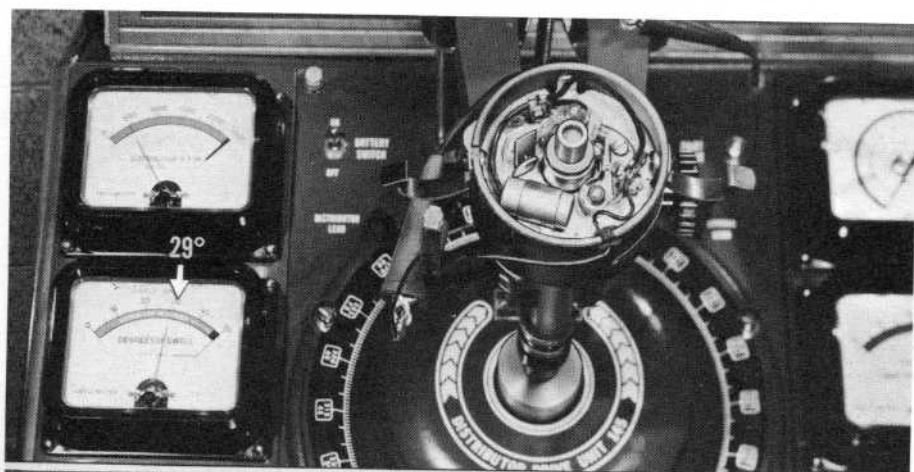


spring to shorten its effective length to increase tension. Lengthen the spring's effective length to decrease tension. Tighten the nut and recheck tension.

Checking  
cam  
dwell  
precisely  
is  
extremely  
important  
on  
Corvette

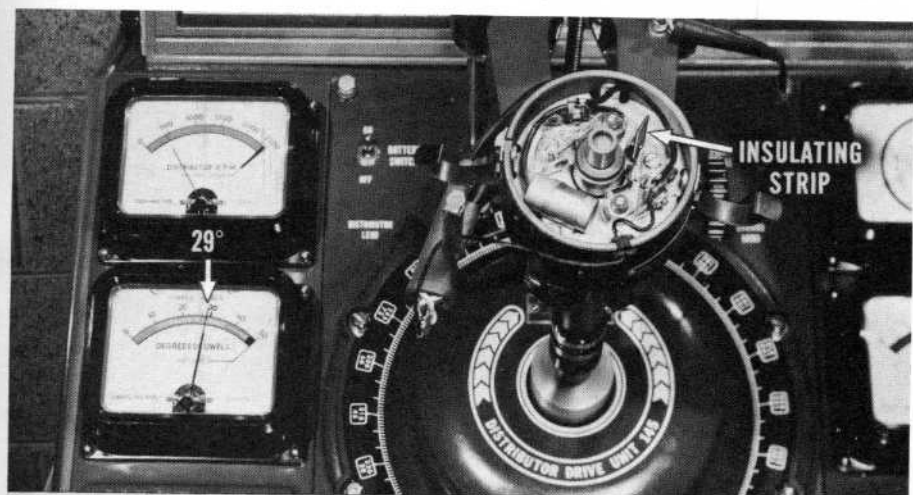


distributors. Block either set of points open with a strip of insulating material at least .025" thick. Then—

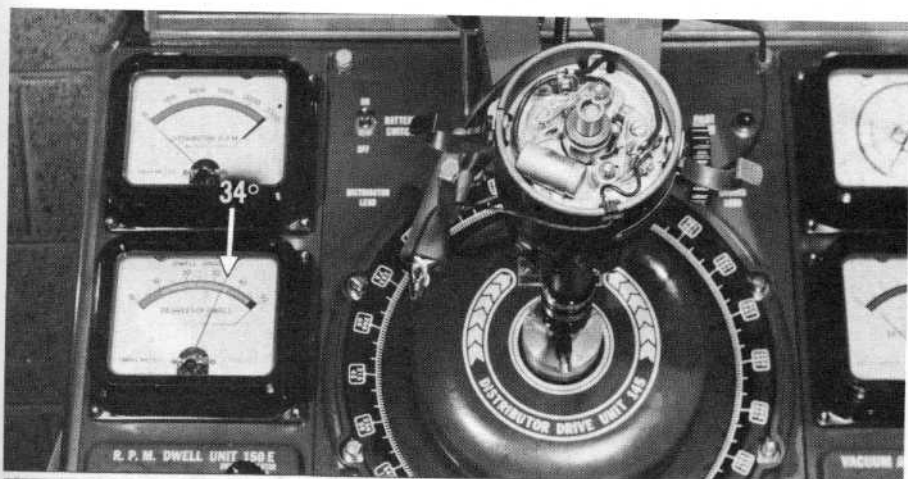


—check the dwell angle with only one set of points operating. It should be 29 degrees. If necessary, adjust gap of operating set of points to obtain this reading as precisely as possible.





Shift the insulating strip to the *adjusted* set of points and check the dwell angle of the second set. Again, adjust if necessary, to 29-degree reading.

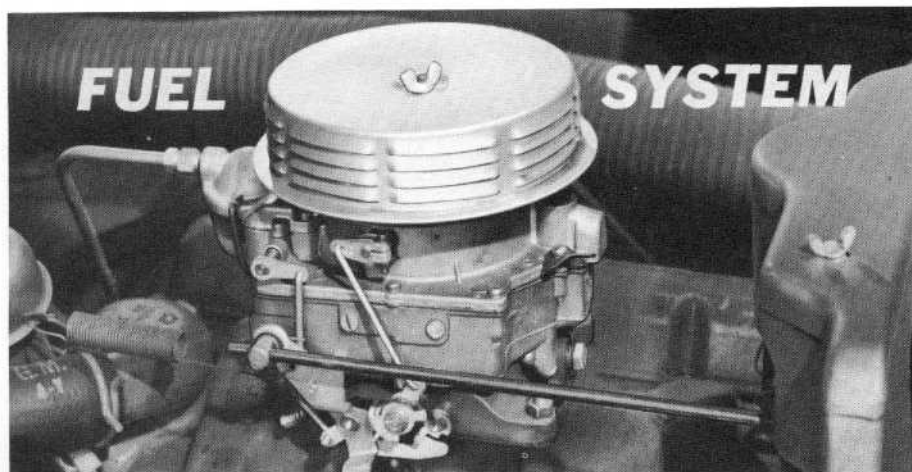


Remove the insulating strip. Total dwell angle with both sets of points in operation should be 34 degrees, plus or minus one. If not, recheck dwell of each set of points separately and adjust as necessary.

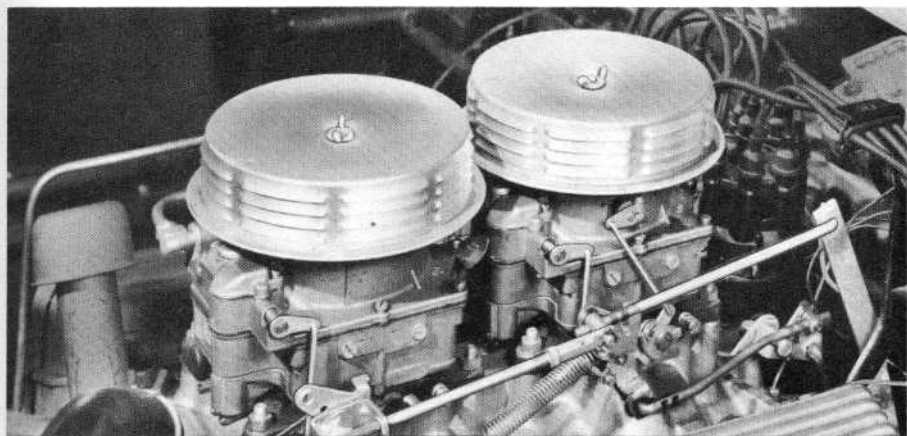
Following are the recommended ignition timing settings

	Degrees BTDC at Idle
ALL SINGLE CARBURETORS	4°
1956 DUAL CARBURETORS	8° to 12°
ALL 1957 DUAL CARBURETORS AND 1957 FUEL INJECTION WITH HYDRAULIC VALVE LIFTERS	12° to 14°
1957 FUEL INJECTION WITH SOLID VALVE LIFTERS	4° to 8°

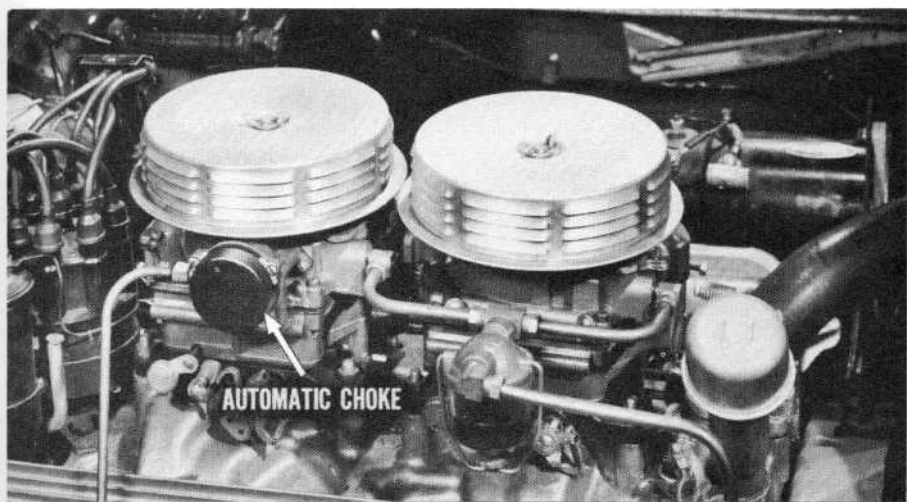
Where a range is given, the maximum setting is permissible only with the very highest octane fuels available. All settings must be made at slowest possible idle. If distributor has vacuum advance, it must be disconnected while setting timing.



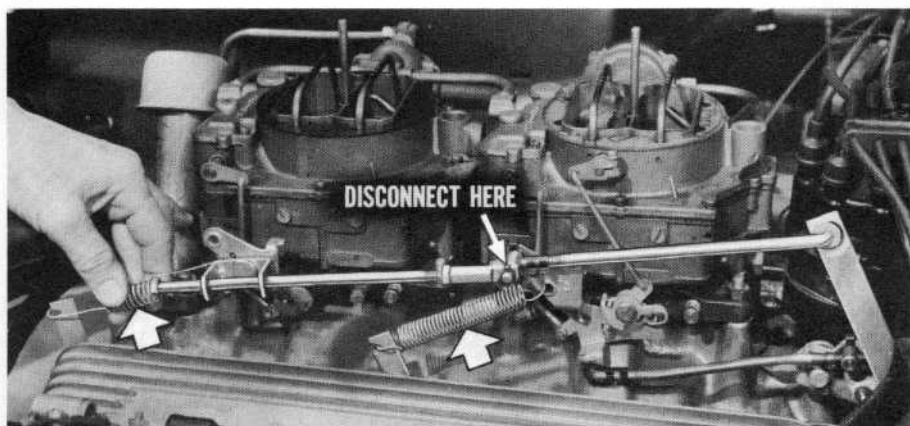
The various fuel systems available call for a variety of tune-up procedures. On single four-barrel carburetors, all procedures are exactly the same as on regular passenger cars equipped with Power Pack.



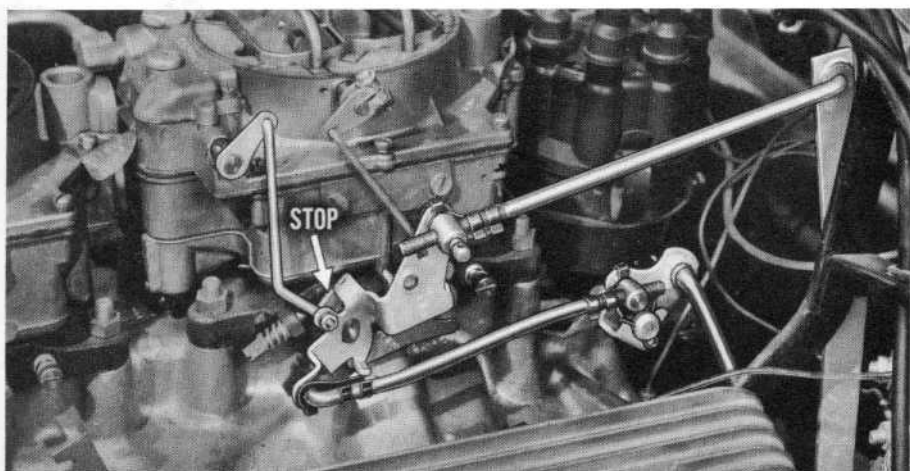
Each of the two Carter carburetors of the dual carburetor system is almost exactly the same as the Carter carburetor used in the single installation. Overhaul and all internal adjustments are the same.



An automatic choke is provided on the rear carburetor only. A lockout device prevents the front carburetor throttles from opening while the choke is on.

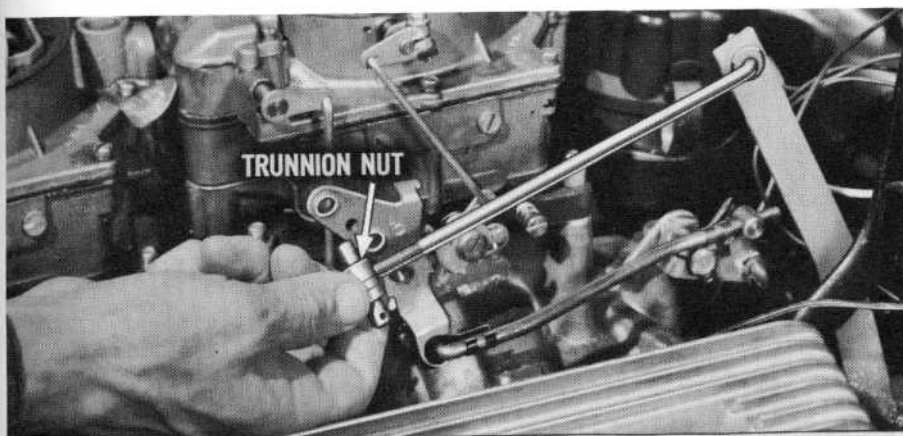


To adjust the throttle linkage on the dual carburetor installation, first remove the air cleaners and both throttle return springs. Remove cotter pin and disconnect front throttle rod from rear carburetor throttle lever.

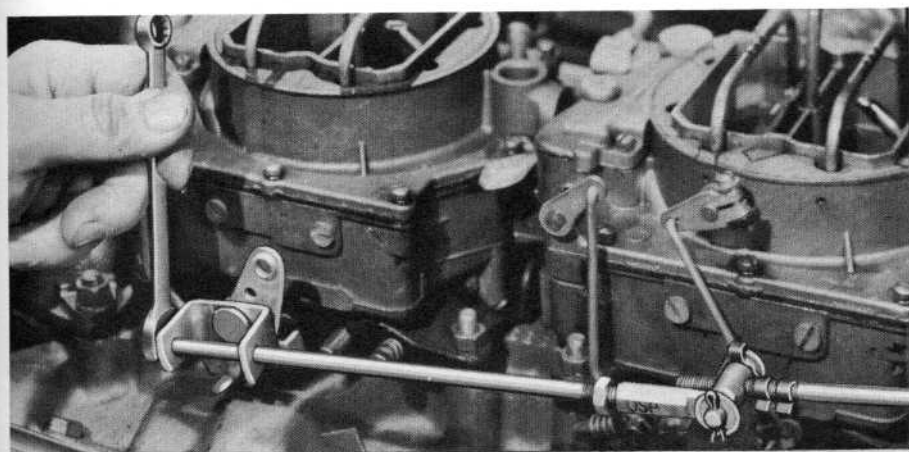


Depress accelerator pedal until accelerator rod contacts floor mat. At this point, rear carburetor throttle valves should be wide open and throttle lever against stop.

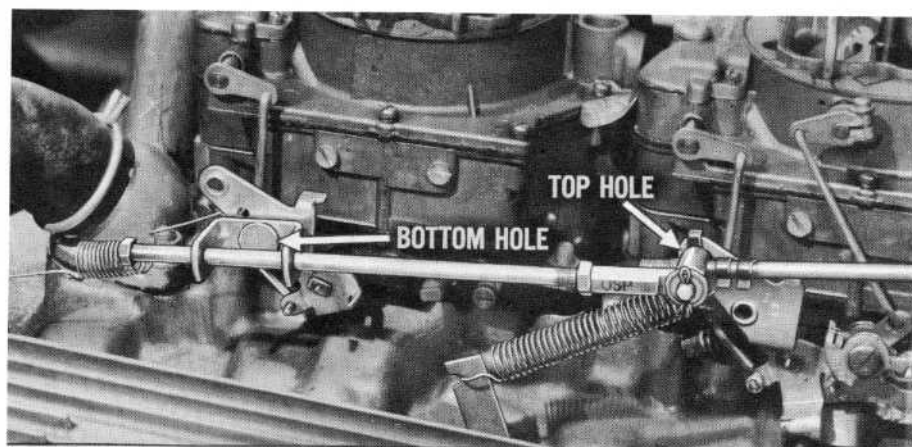




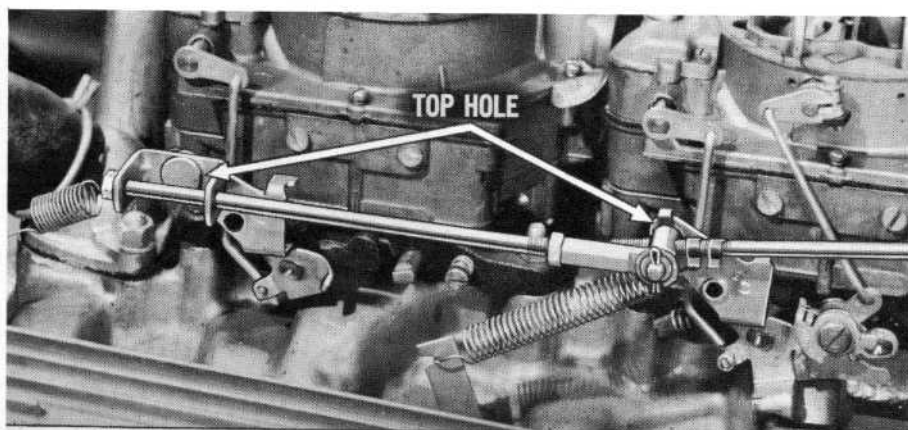
If necessary, remove spring clip, pull trunnion nut from throttle lever, and turn nut forward or back on rear throttle rod until rear carburetor throttles are wide open when accelerator rod is against floor mat.



Connect front throttle rod. With the rear carburetor throttles wide open, front carburetor throttles should also be wide open against stop. If not, shorten or lengthen front throttle rod as required. Install return springs.

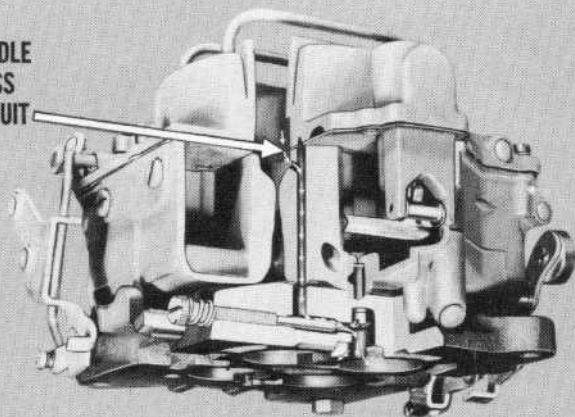


Normal arrangement of linkage is connected to top hole in rear carburetor lever and bottom hole of front carburetor lever. This starts the front carburetor opening when rear carburetor is at about half throttle.

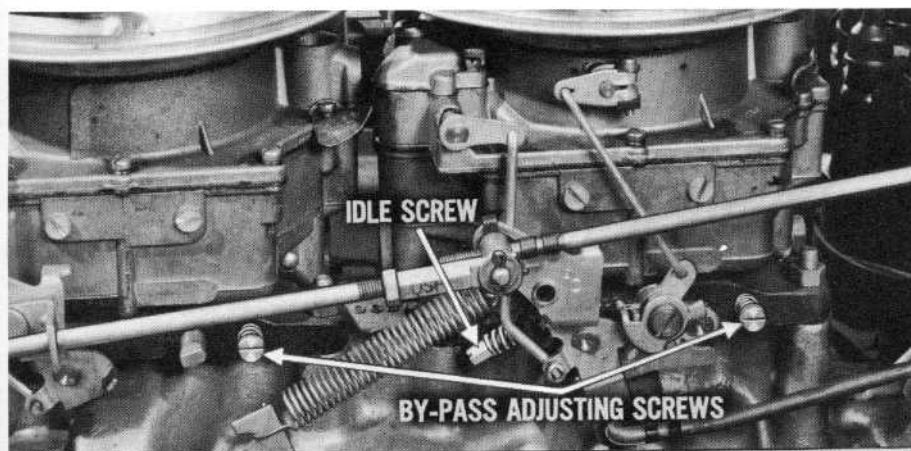


If greater throttle sensitivity is desired, the front throttle rod may be connected to the top hole of the front carburetor lever. This starts both carburetors opening at the same time, which may be desirable for certain types of operation.

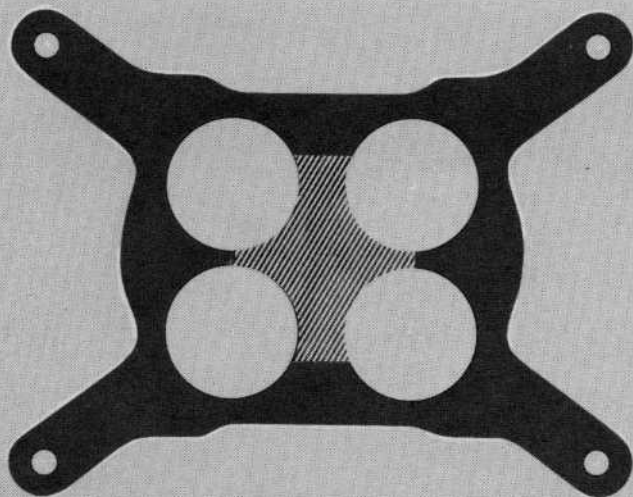
1956 — IDLE  
BY-PASS  
AIR CIRCUIT



1956 dual carburetors originally used an idle by-pass air circuit for adjusting idling RPM. All throttle valves remained tightly closed at idle, the necessary air for idling entering the manifold through the two by-pass air circuits.



All 1956 dual installations should be converted to the 1957 idling system by adding a throttle idle screw to the rear carburetor and closing both by-pass air adjusting screws tightly.



Rework four regular carburetor-to-manifold gaskets as illustrated, cutting out the entire center area. Install two under each carburetor.

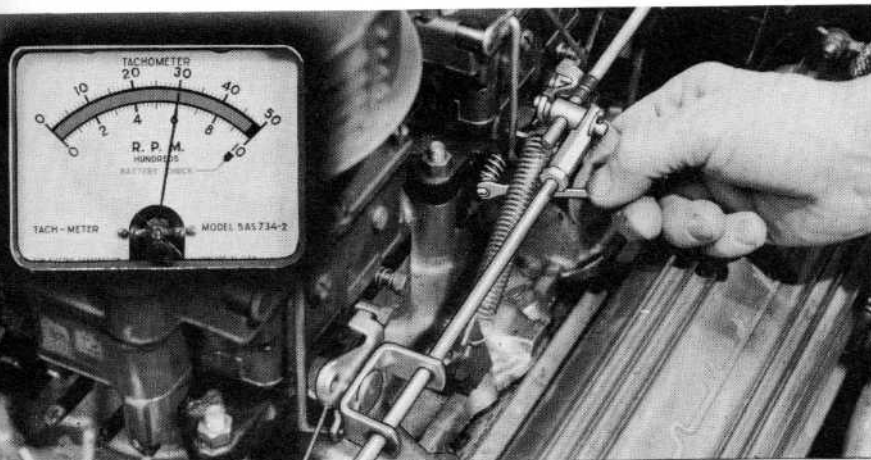
*Also,*

to obtain better low-speed economy on 1956 dual carburetors,

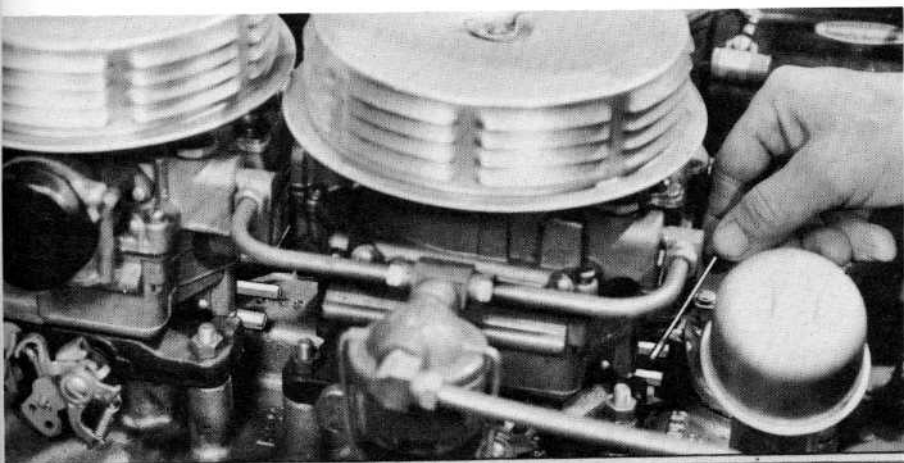
replace the two low-speed jets in each carburetor with .031" jets Part No. 3721027

and the two metering rods in each carburetor with .067", .063" and .054" stepped metering rods Part No. 3742682





Adjust idle speed with idle screw to 600 RPM on all 1956 engines and 1957 engines with hydraulic valve lifters. On 1957 engines with solid valve lifters, adjust idle speed to 800-850 RPM.

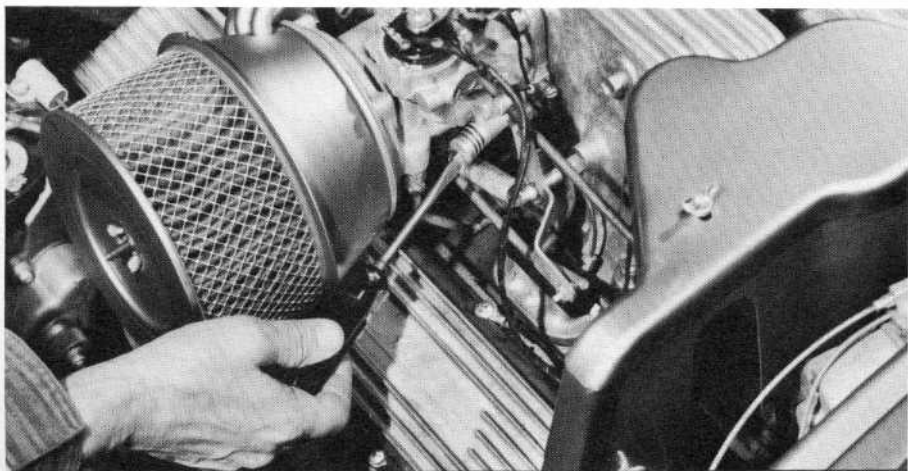


Adjust the two idle mixture screws of each carburetor individually to obtain best engine "feel" and highest RPM. Then turn all screws in one-sixth turn. If necessary, reset idle speed screw.

# FUEL INJECTION



Correct idling of fuel injection engines is accomplished with the idle air and idle fuel screws. Initial setting of both is two turns open.

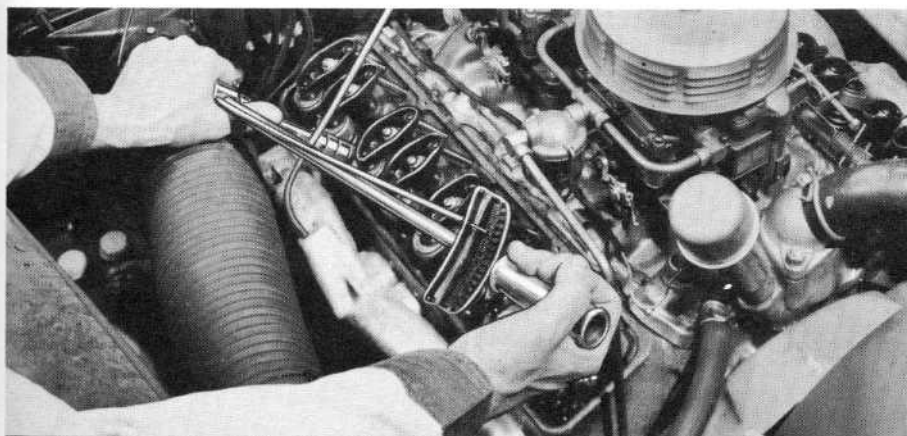


Warm up the engine thoroughly. Then adjust idle air and fuel screws in combination to maintain smooth idle at 500 RPM on engines with hydraulic valve lifters or 700 RPM with solid valve lifters.

## *Note:*

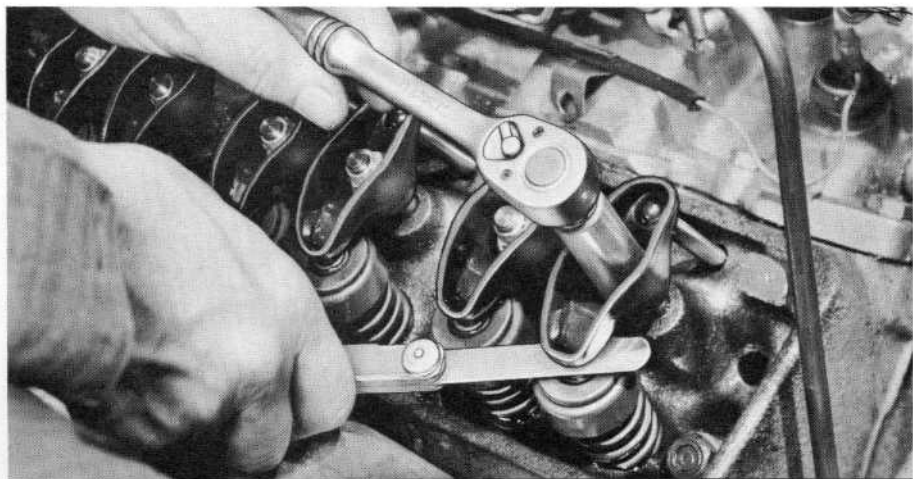
Various throttle linkages have been used since the introduction of fuel injection. In general, it is important only that full throttle be obtained slightly before the accelerator rod contacts the floor mat.

***Consult the latest  
Technical Bulletins  
for exact details.***



Tighten cylinder head bolts in correct order to 60-70 foot-pounds. Use tool J-5860 to tighten head bolts under exhaust manifolds. Tighten intake manifold bolts to 25-35 foot-pounds and exhaust manifold bolts to 18-22 foot-pounds.

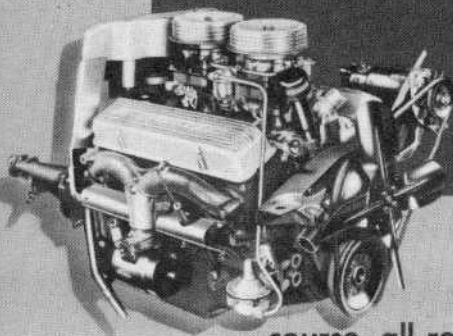
**Tighten engine  
mount bolts —  
Front mounts —  
25 to 35 ft. lbs.  
Front mounting  
beam and  
water pump to  
engine block  
bolts — 19 to 24  
ft. lbs. Rear  
mounts — 50 to  
55 ft. lbs.**



**On engines with solid lifters, adjust exhaust valve lash to .018" and intake valve lash to .012". (For continuous high performance use, adjust intake valve lash to .008" to increase duration of intake cycle).**

This concludes

the tune-up  
specifications which  
are special to  
Corvette engines.



In addition, of  
course, all regular steps in an engine  
tune-up must be performed in an orderly fashion.

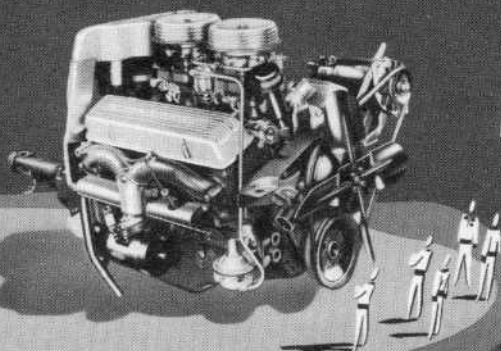


You may follow the tune-up procedures outlined in the Chevrolet Engine Tune-up Manual, shown in the T-O-P slidefilm, "Turbo-Fire Tune-up," or recommended by the manufacturer of your tune-up equipment.



Yes, tuning a Corvette engine is where  
**PRECISION CRAFTSMANSHIP**

really pays off  
in  
**PERFORMANCE**



You now have  
the necessary information to  
apply **YOUR CRAFTSMANSHIP**

**NOTES:**

