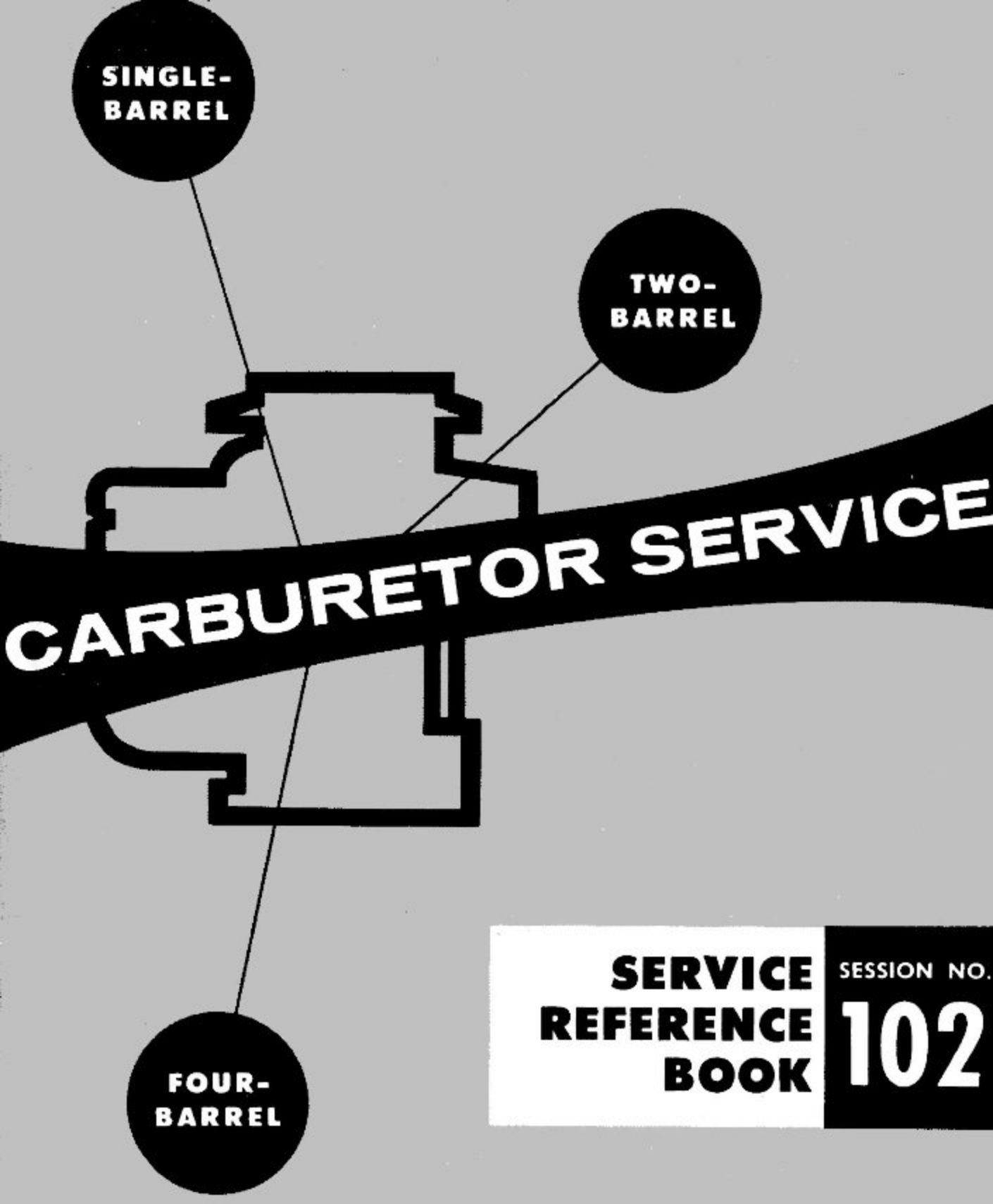


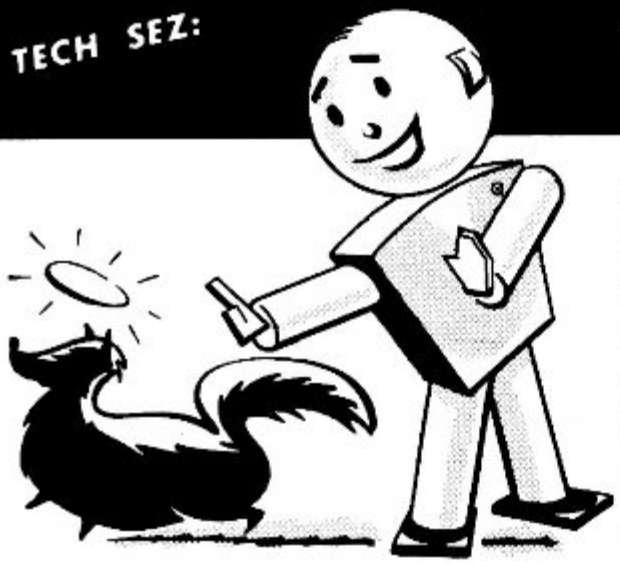
CARBURETOR SERVICE

SERVICE REFERENCE BOOK

SESSION NO. 102

PREPARED BY CHRYSLER CORPORATION
PLYMOUTH • DODGE • DE SOTO AND CHRYSLER DIVISIONS

TECH SEZ: CARBURETORS ARE OFTEN BEST WHEN LEFT ALONE!



Sometimes poor engine performance prompts an owner to accuse the carburetor unfairly. Every now and then, one of us technicians jumps to the same conclusion. But ordinarily, most of us realize that the carburetor is one of the last units on the car to check.

Actually, that's what this reference book is all about. It points out other factors important to good engine performance that require checking before the carburetor needs attention. In addition, it spells out the latest procedures to follow when correcting an engine rough idle condition, and other unusual conditions for which the carburetor might be blamed.

Here's where to look for this helpful service information:

FACTORS AFFECTING SMOOTH ENGINE IDLE PERFORMANCE

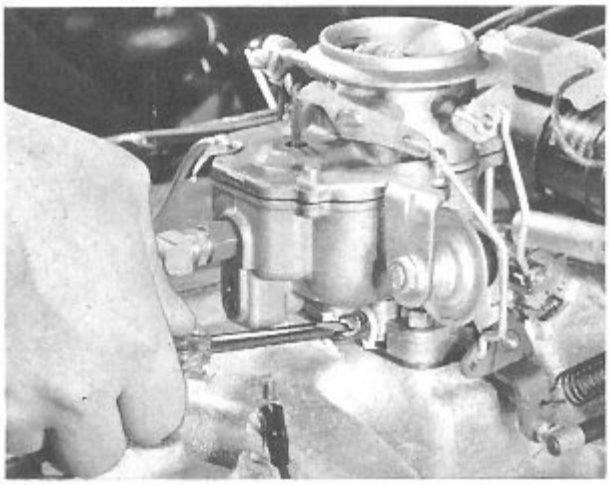
GENERAL

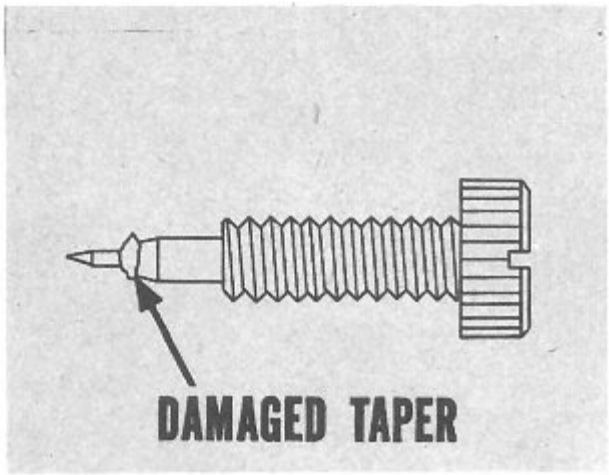
Occasionally you may be asked to adjust the carburetor in order to obtain a smoother engine idle. If so, keep in mind that there are many points of tune-up adjustment that have a bearing on engine idle performance, in addition to the carburetor. Also, what you do to improve a case of rough idle on one car, you'd have to do on *any* car. What's more, the same general procedure to follow applies, no matter what kind of carburetor's on the engine!

In other words, you should make the same general checks whether you're working on an engine equipped with a single-, double-, or four-barrel carburetor. Also, the same routine is helpful whether the engine has 6 or 8 cylinders, and whether it has the standard or the PowerFlite automatic transmission. Said another way, the service information given here is useful to all technicians, no matter what car is involved at whatever dealership.

With a case of rough idle, and *lots* of cases of poor engine performance, however, the carburetor's the last unit to check. After all, it's mainly a *mixing bowl* that feeds fuel and air to the engine in the proper proportions. Rather than stay on the carburetor for any longer than the preliminary check mentioned, it's much smarter to look the *ignition* over closely.

Make this Preliminary Check. To begin with, it's often helpful to make a preliminary check on the carburetor. First, turn the idle mixture screws *in* to see if the engine will stall from too lean a mixture. Next, turn the screws out to see if the engine idle becomes rough from too rich a mixture. It's important to know if you're getting a change in mixture by changing the adjustment. If you are, you know that the carburetor idle system is probably all right, and that something else is causing the rough idle.



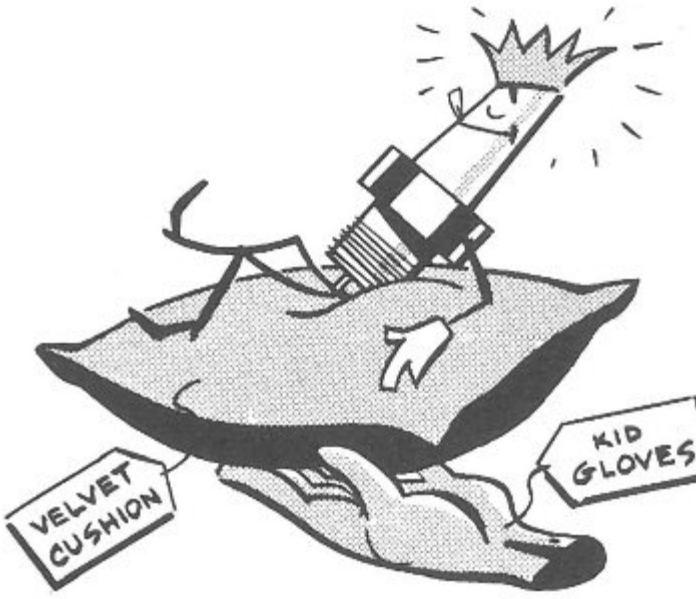


If the engine won't smooth out, remove the idle mixture screws to see if they are damaged. Sometimes a ridge is formed on the taper if the screw has been jammed too tightly into the seat. Replace the screws if they are damaged.

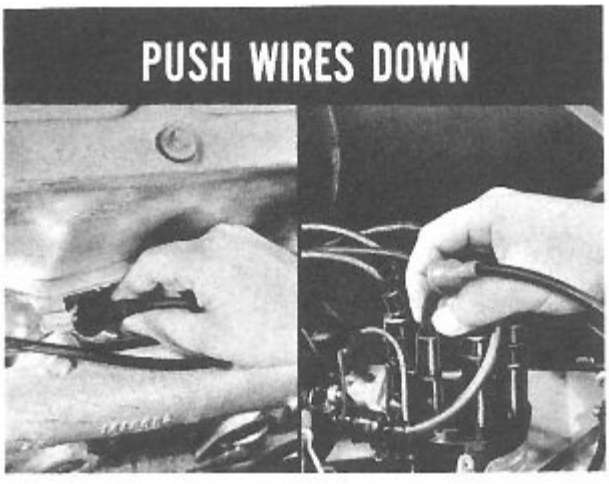
CHECK IGNITION

Spark Plugs. Start with what's needed for a good spark to fire the mixture – the spark plugs. Make sure the plugs are the right type for the kind of driving the owner does. Also, check the gap at the electrodes. It should be .035". The electrodes should be clean, free from corrosion, or wear due to erosion.

Use a round-wire gauge to check the spark plug gap. After adjusting the electrodes, too, handle the plugs very carefully. During installation, it's so easy to bump the electrodes on these long plugs. Closed-up gaps can easily contribute to rough idle.

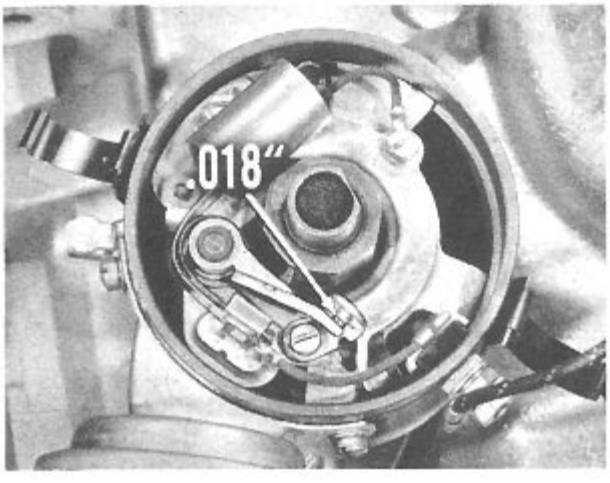


Spark Plug Wire Connections. Here's something else: Push the wires down fully on the spark plug terminals. Sometimes the rubber boot prevents a good electrical connection. Push the wires firmly into the distributor cap towers, also. Good connections are vital.

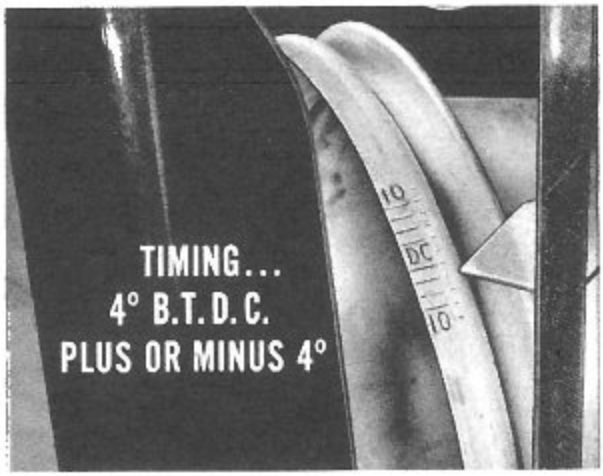


While you're at it, be sure to push the rubber cups carefully over the distributor towers. Remember—if the cups are too close to the ends of the wires when you make the connections, they may interfere with good electrical contact.

Distributor Points. Another thing, see that the distributor points are clean and set at .018″ clearance (.015″ to .018″ on some models—check specifications). Check the rotor to see that it's the proper type—one that's not too short. Look for evidence of arcing, or cracks in the cap.



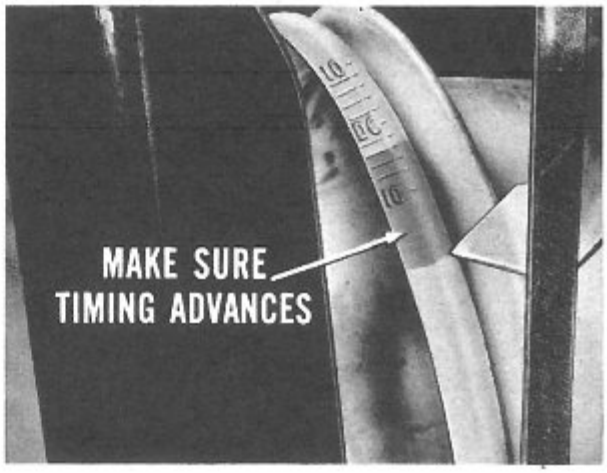
Ignition Timing. Once you've made your electrical check, you can look into the matter of ignition timing. The Plymouth V-8 engine, for example, calls for a timing setting of 4° B.T.D.C.–plus or minus 4°. On Plymouth V-8 engine with the 4-barrel carburetor, set timing at *top dead center*. Don't guess at these settings. Follow the specification as listed in the accompanying table whenever you make this important check.



IGNITION TIMING—1956 MODELS

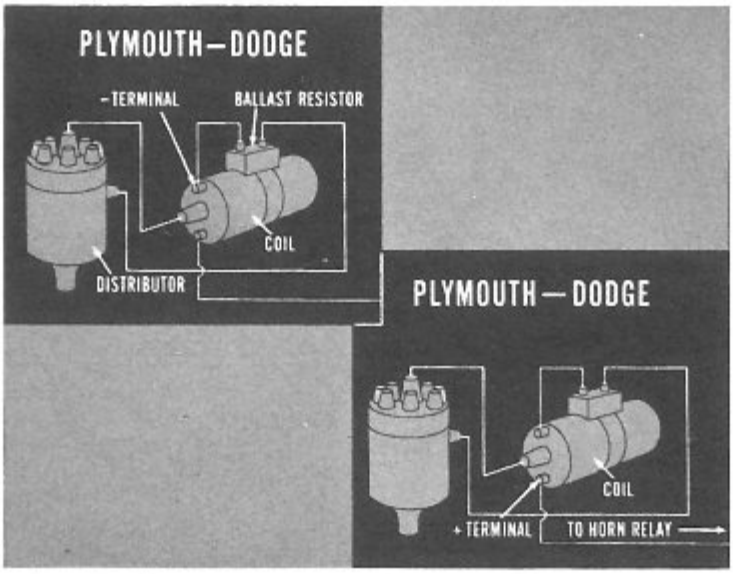
Plymouth 6-Cylinder	2° B.T.D.C., Plus or Minus 4°
Plymouth V-8	4° B.T.D.C., Plus or Minus 4°
Plymouth V-8 (4-Barrel Carburetor)	T.D.C.
Dodge 6-Cylinder	2° B.T.D.C., Plus or Minus 4°
Dodge Coronet V-8	4° B.T.D.C., Plus or Minus 4°
Dodge Royal and Custom Royal V-8	6° B.T.D.C., Plus or Minus 2°
De Soto Fireflite	4° B.T.D.C. (No tolerance)
De Soto Firedome	8° B.T.D.C. (No tolerance)
Chrysler Windsor	2° B.T.D.C. (No tolerance) Single-point distributor
Chrysler Windsor (4-Barrel Carburetor)	10° B.T.D.C. (No tolerance) Dual-point distributor
Chrysler New Yorker	4° B.T.D.C. (No tolerance)
Imperial, Crown Imperial	4° B.T.D.C. (No tolerance)

Use the timing light, too, when setting timing. Use the light, also, to make sure timing *advances* when the throttle opens. If it doesn't advance as it should, remove the distributor so you can check it thoroughly on a tester. Check both the mechanical and the vacuum advance of the distributor on the tester. This is mighty important!

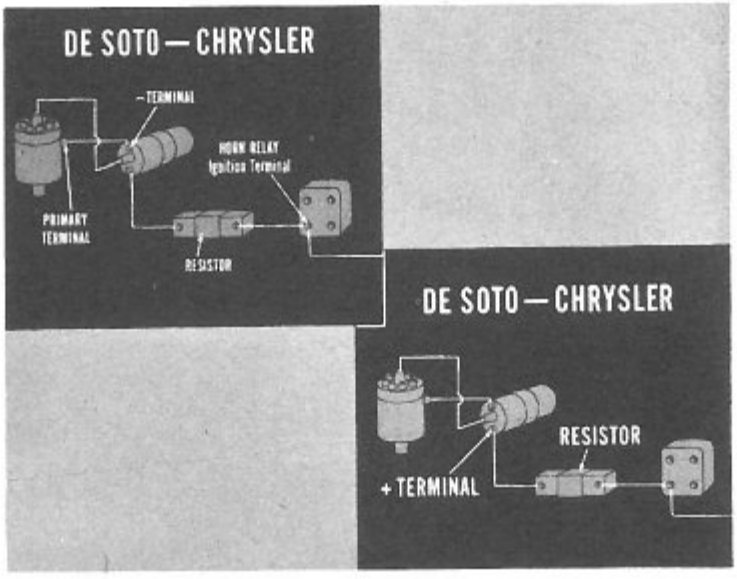


Polarity of Primary Circuit. Another point to check along the electrical line is the possibility of *reverse polarity* due to incorrect connections of the primary leads at the coil. Reverse polarity will cause weak ignition.

Keep in mind that on the Plymouth and Dodge cars the lead from the coil *negative* terminal is connected to the ballast resistor. Another lead goes from the other terminal of the resistor to the primary terminal on the distributor. In addition, the lead from the coil positive terminal goes to the ignition terminal of the horn relay.



On De Soto and Chrysler engines, the lead from the coil *negative* terminal should connect directly to the primary terminal on the distributor. But the lead from the *positive* terminal of the coil goes to the ballast resistor. This places the ballast resistor between the horn relay and the coil positive terminal. It's important to keep this straight.

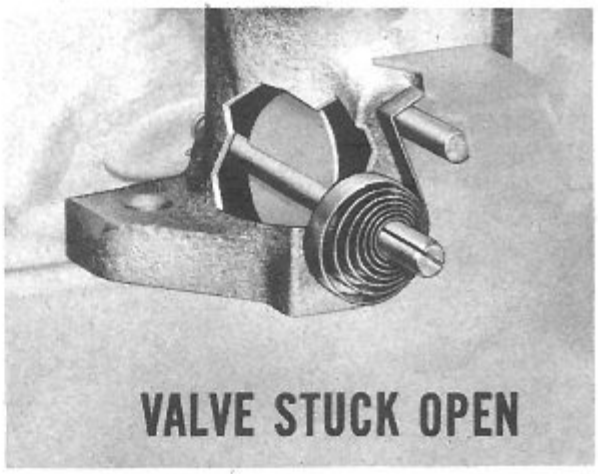


Check the leads over for loose connections which can cause high resistance and result in poor ignition. You'd better check the connections around the ballast resistor especially.

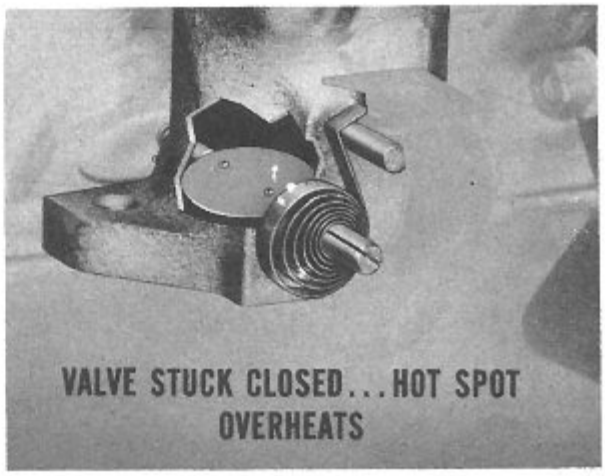
MANIFOLD HEAT CONTROL VALVE

Always make it a point to check the manifold heat control valve for sticking. Wiggle it. See that it works freely at all times, even when it is hot. Rev up the engine after warm-up and see if the control valve kicks open.

Remember . . . a valve that's stuck *open* won't let the intake manifold hot spot heat up soon enough. This delays proper vaporization of the fuel and results in stumbling and hesitation during engine warm-up.

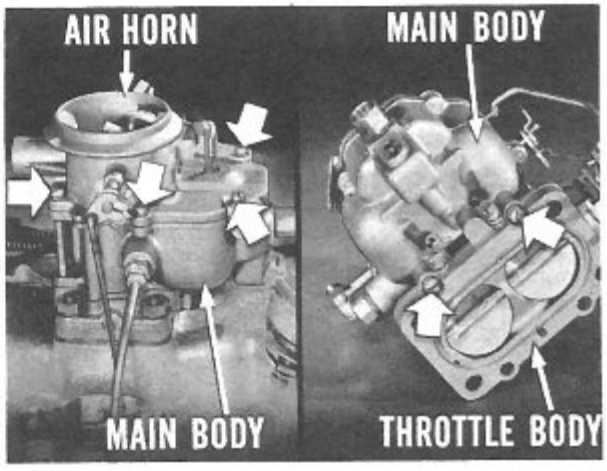


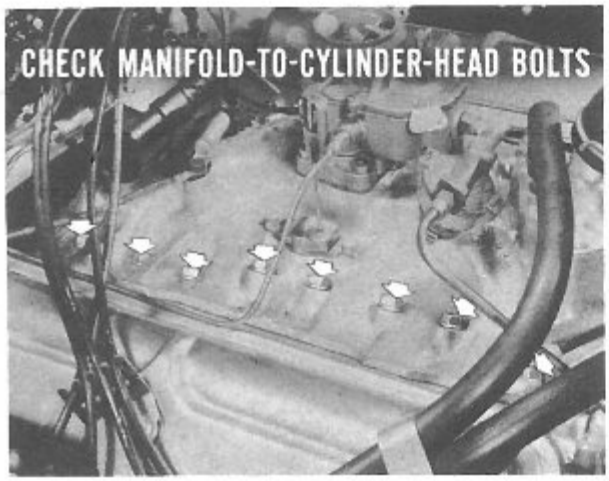
A valve that's stuck in the *closed* position will cause the hot spot to overheat after the engine is warmed up. This will lead to loss of power, percolation, and hard hot-starting conditions. You just can't check the manifold heat control valve too often. It pays to look it over every time a car comes in. If necessary, free it up so it will work easily. Regular application of "MoPar Engine Care" (Part No. 1643273) to the valve shaft during lubrication periods prevents carbon and lead deposits from interfering with valve operation.



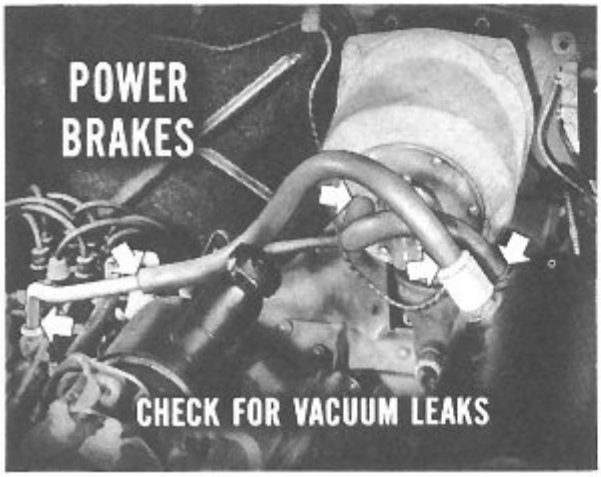
AIR LEAKS

Check for air leaks into the intake system next. See that the screws which hold the carburetor sections together are tight. Check the screws between the air horn and main body, and particularly those that hold the main body to the throttle body.

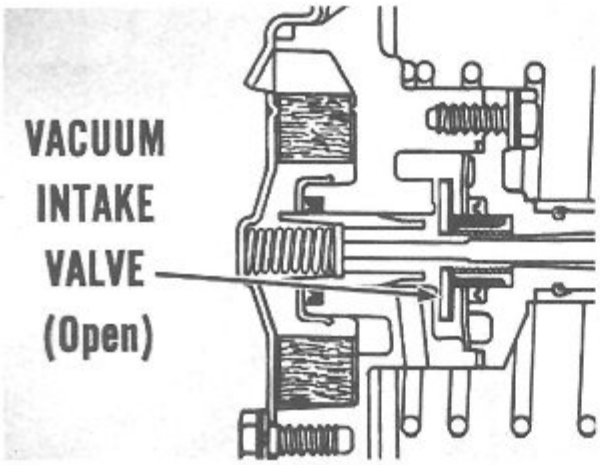




Besides those, check the stud nuts holding the carburetor to the intake manifold to be sure they are tight. In addition, check the manifold-to-cylinder-head attaching bolts to see that they are tightened to 30 ft.-lbs. torque. Anything that admits air will upset the mixture ratio and cause a rough engine idle.



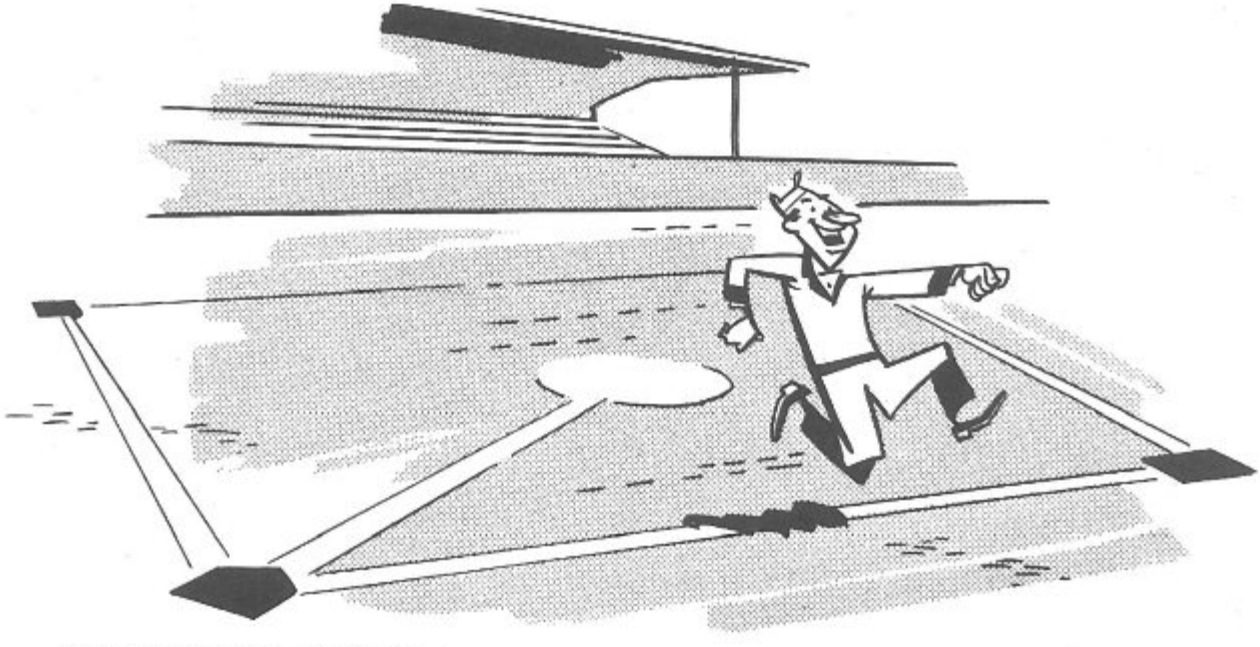
If the car is equipped with power brakes, you'd be wise to check for a vacuum leak at the hose connections on the intake manifold and the brake unit.



In addition, the brake pedal linkage might be improperly adjusted. If this is what you find, you'll know that the vacuum intake valve in the brake unit is being held partially open. This is an unusual condition, but it may be that hard-to-find cause of rough engine idle.

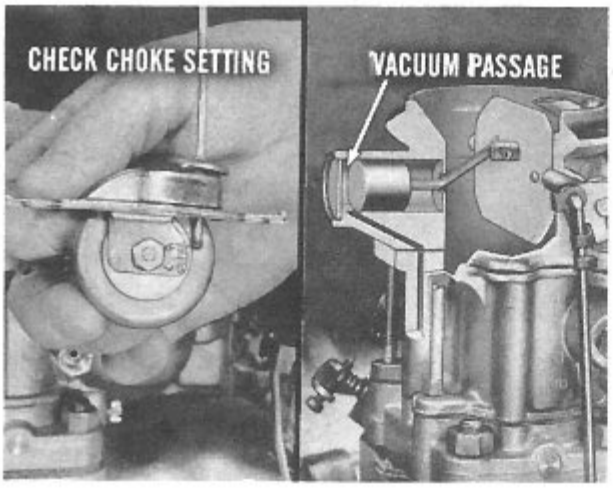
Mechanical Tappets. If the engine uses mechanical tappets, it's always smart to check valve lash to see if it's up to specifications. As a reminder . . . clearance for intake valves of the Plymouth V-8 engine should be .008″; exhaust valves should be set at .018″. Unless valve lash is right, it will upset valve action and engine idle just won't be smooth. Once all these tune-up items have been checked, you can turn your attention to the carburetor.

CARBURETOR MAINTENANCE

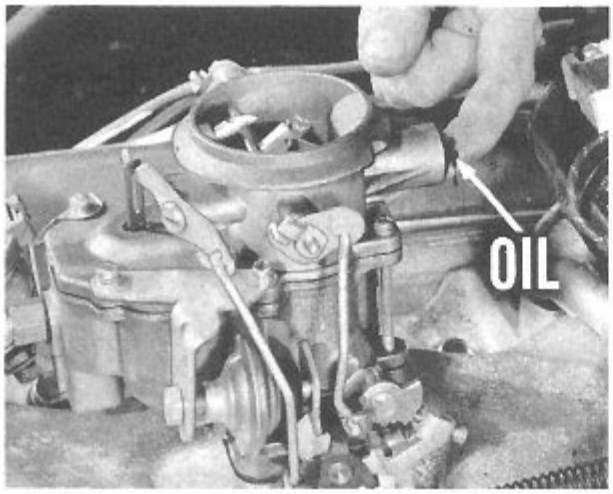


AUTOMATIC CHOKE

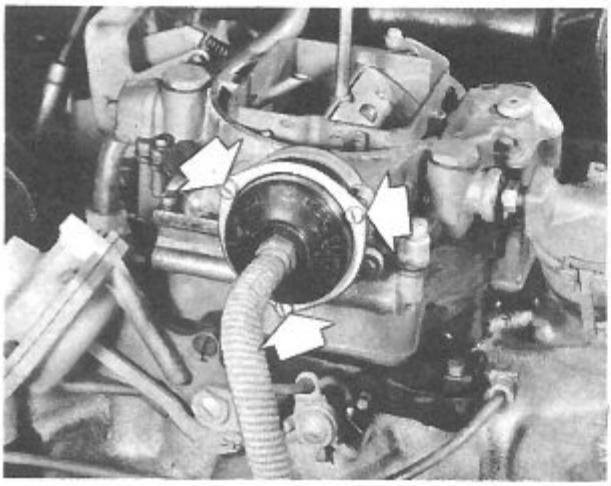
First base to tag on carburetor checking is the automatic choke. As you probably know, the choke must be wide open when the engine is warm before you can adjust engine idle speed. If the choke valve were *not* wide open, the engine would run on a mixture that's far too rich. This would cause poor fuel economy, as well as rough engine idle.



So, first check the choke coil setting. It might be too rich. Besides that, the choke vacuum passage to the piston might be partially plugged by dirt or other foreign matter.



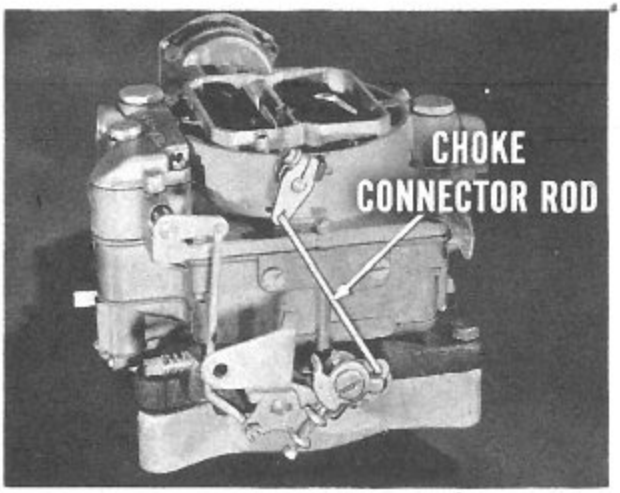
There might also be an air leak at the plug in the end of the vacuum piston cylinder. That would prevent full vacuum being applied to the piston. You can test this by smearing some oil on the plug. If the oil is drawn in around the plug, you'll know there's a leak and that the air horn should be replaced.



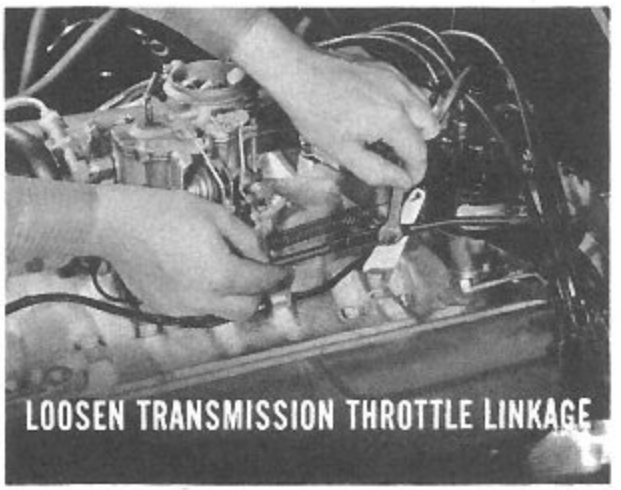
On 4-barrel carburetors, check tightness of the screws that hold the choke housing to the air horn. Admitting air to the housing can affect the tension of the bimetallic coil. All of these items, as you can see, are important to getting the right amount of heat to the choke coil.

IDLE SPEED ADJUSTMENT

After you get through with the choke, see that the fast idle adjusting screw is *off* the fast idle cam. If that fast idle screw *isn't* off the cam when the choke valve is open, check the linkage for binding. You'd better check the adjustment of the choke connector rod, also. It could be incorrect.



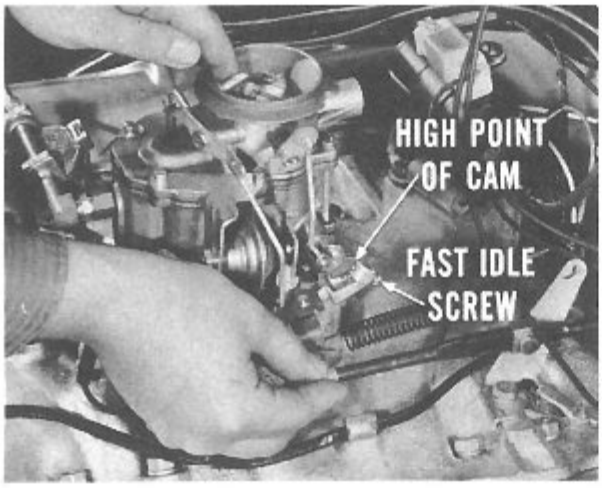
If the car you're working on is equipped with PowerFlite, loosen the transmission throttle linkage before you attempt to adjust engine idle speed. This will insure a complete return of the carburetor throttle to the idle throttle position.



Hook up a tachometer. Then, with the engine warmed up to its normal operating temperature, set the idle speed adjusting screw for an idle speed of 475 to 500 r.p.m. Finally, adjust the idle mixture screws to get the smooth-

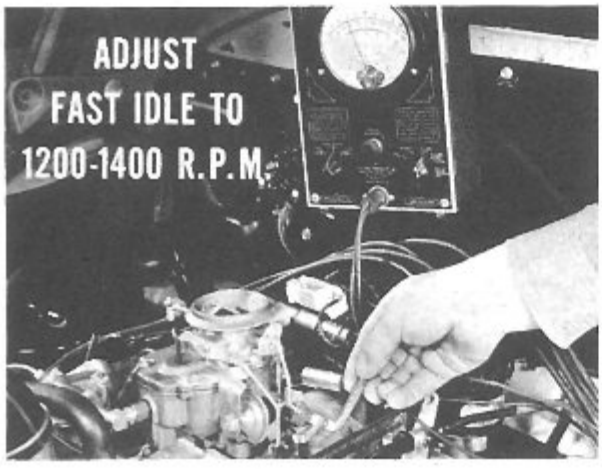
est idle you can. Shoot for an idling quality that you know the customer will find acceptable. Remember . . . adjusting the mixture screws might change the idle speed. So, if necessary, go back to the idle speed adjusting screw and readjust it to get the proper idle speed. Keep in mind that it takes a combination of the right *idle speed* setting and the proper *mixture* adjustment to get the smoothest engine idle.

After you get the correct idle speed, you can adjust the transmission throttle linkage and tighten it. Then, recheck your idle speed setting to be sure it didn't change.



FAST IDLE ADJUSTMENT

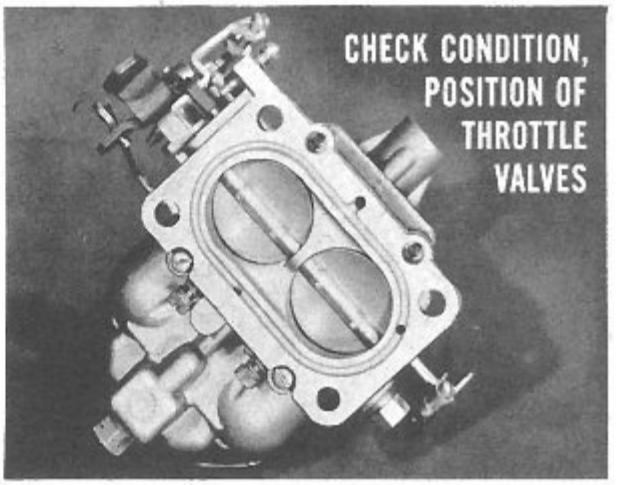
One more thing – you should still check the fast idle adjustment. Do this with the engine hot, and by means of the fast idle adjusting screw. With the ignition off, hold the choke valve closed. Open and close the throttle so the fast idle screw bears against the high point of the fast idle cam.



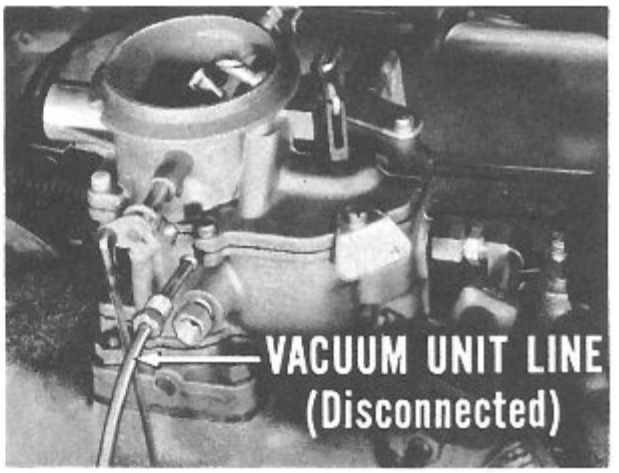
Release the choke and then start the engine. Because the choke coil is hot, the choke valve will drop open. Adjust the fast idle screw to give a speed of 1200 to 1400 r.p.m.

Don't forget . . . setting the fast idle *too high* causes the car to jerk forward (or backward) when the transmission is engaged. Setting fast idle *too low* will cause stalling during warm-up.

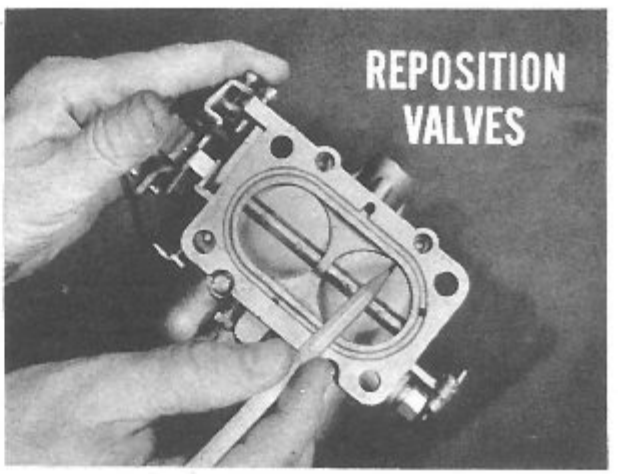
Throttle Valves. Sometimes you have to check the condition and the position of the throttle valves, particularly in a two-barrel or four-barrel carburetor. If they've been damaged by careless handling, or are set so both of them don't close tightly, you won't get a smooth idle.



Try this preliminary test for a misaligned set of throttle valves without having to remove the carburetor. Check the ignition timing with the line to the distributor vacuum advance unit disconnected. If timing's the same with the line connected and disconnected, the throttle valves are probably in proper position and undamaged. But, if timing varies when the line is connected and disconnected, or the idle is still rough, chances are the throttle valves are not operating in the same plane. One is partially open, while the other is closed.



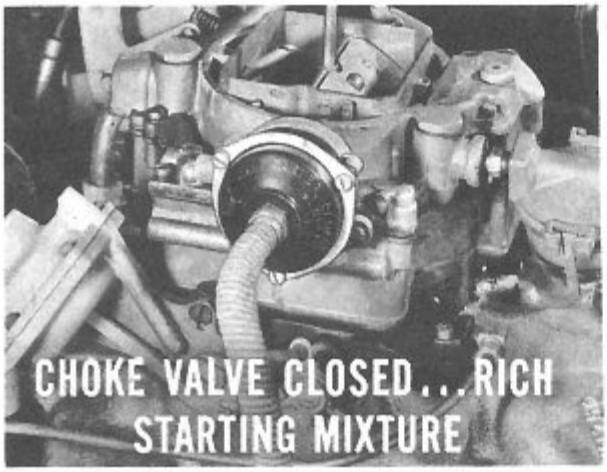
In a case like that, remove the carburetor. Then back out the idle speed screw and see if both valves close tightly in their bores. If they don't, loosen the screws and reposition the valves so they do.



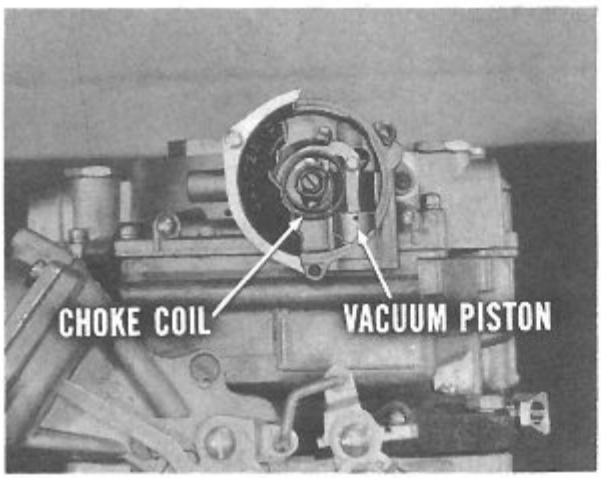
CAUTION: Save yourself a headache whenever you remove a carburetor from an engine for work on the bench. Always put the carburetor on a repair stand to protect the throttle valves from damage.

"LOADING" CONDITION— 4-BARREL CARBURETOR

Occasionally, you may get a report that an engine will start, run a few seconds, stall, then won't start again. This is a "loading" condition and shows up usually on a cold engine equipped with a 4-barrel carburetor. Often, the owner runs his battery down trying to restart the engine.

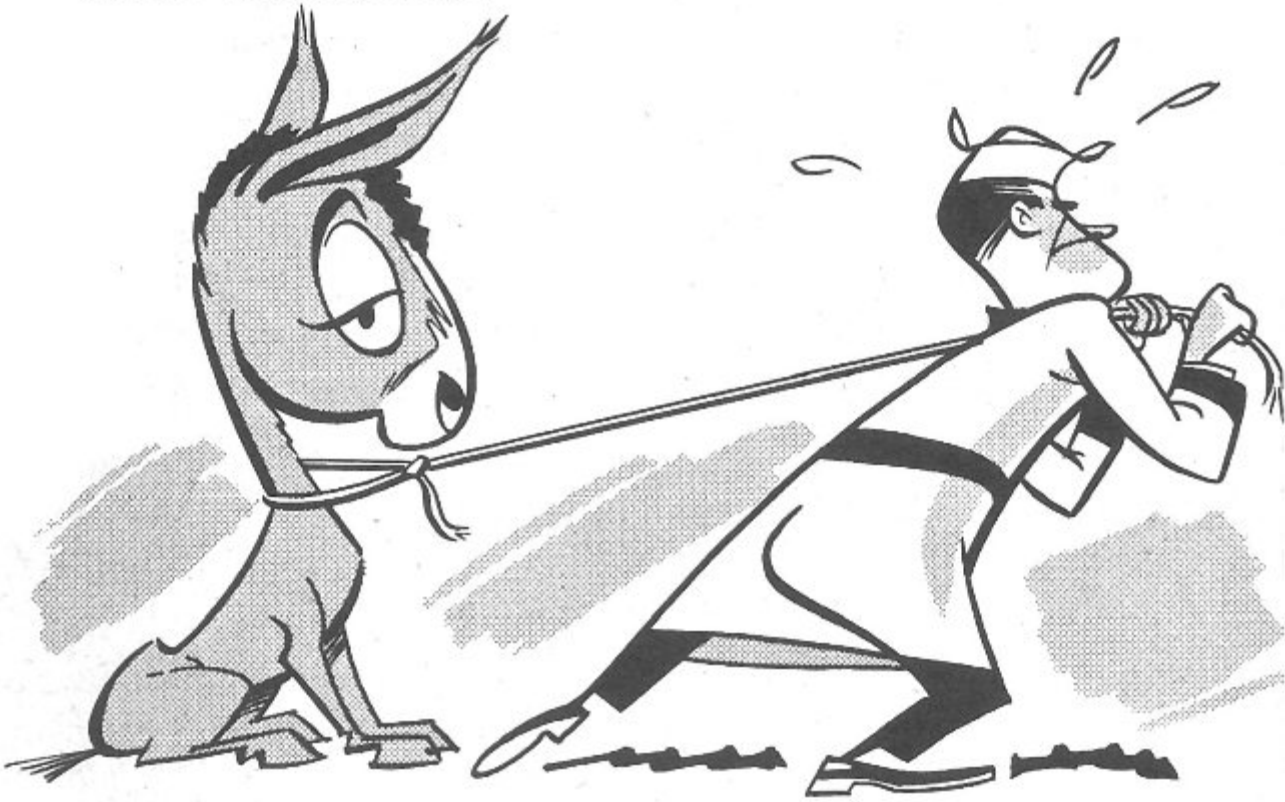


Behind this "loading" condition, frequently, is too rich a starting mixture. It's so rich that the engine can't burn it and consequently stalls. Of course, you know the choke valve is closed completely when the engine is cold. A rich starting mixture is drawn into the cylinders. It fires and the engine starts.

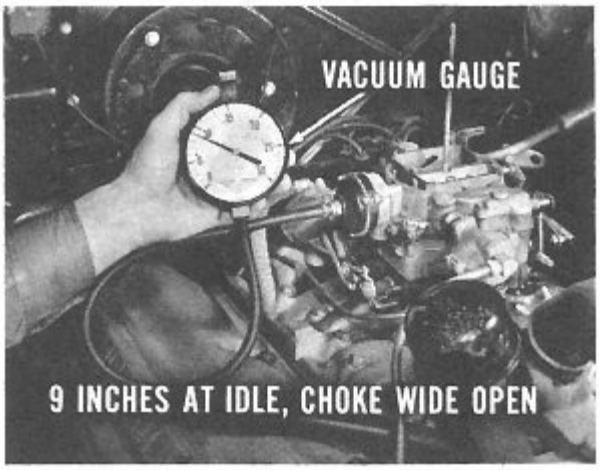


Immediately, then, the vacuum piston connected to the choke valve pulls the valve open slightly. This piston pulls against the tension of the choke coil. Now, if anything delays this action of the vacuum piston, the choke won't be pulled open when the en-

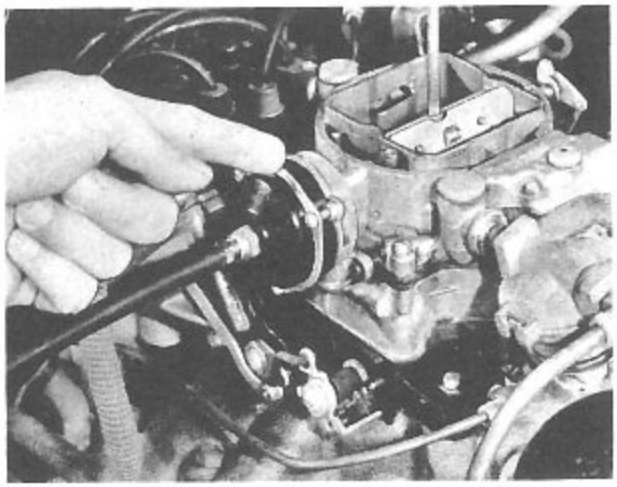
gine begins to run. So, the cylinders keep pulling in a mixture too rich, and the engine stalls. Therefore, check the vacuum piston for freedom of movement. If the piston is stuck, clean out the housing and the vacuum passage.



If you suspect that the choke isn't opening as it should, you can check the vacuum pull on the piston. With a vacuum gauge connected to the choke housing, you should get a vacuum reading of about 9 inches when the engine idles and the choke is wide open. A reading lower than 7 inches will point to some obstruction or leak in the vacuum passage.



Again, check the plug in the end of the vacuum cylinder. A leak at this point will lower the vacuum pull. Smear some oil on the plug and see if it is sucked in.



A cracked choke housing, also, could be at fault. It would not only let cold air leak in, but it would reduce the amount of heated air drawn in. The choke thermostatic coil wouldn't warm up and relax its tension. This would prevent the choke valve from opening.

CHECK THE UNLOADER ADJUSTMENT

Where a loaded engine fails to start, pressing the accelerator to the floor operates the choke unloader. That leans out the mixture, so the engine will start.

If the unloader doesn't appear to operate correctly, hold the primary throttle valves in fully opened position. Insert the $\frac{3}{16}$" gauge (T-109-28) between the choke valve and dividing wall of the main body. With light finger pressure applied against the upper part of the choke valve, you should feel a slight drag as the gauge is withdrawn. If you don't feel this drag, or if you feel too much drag, bend the unloader tang on the throttle lever, using bending tool (T-109-41).

Choke unloader adjustment on the Dodge follows the same procedure except that a No. 19 drill is used to gauge the clearance between the choke valve and the air horn. The adjustment is made by bending the tang of the cam contact lever.

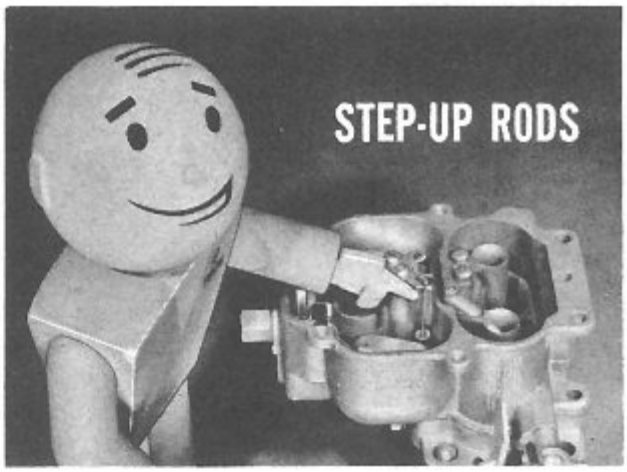
"SURGING" CONDITION— 30 TO 40 MPH, CONSTANT SPEED

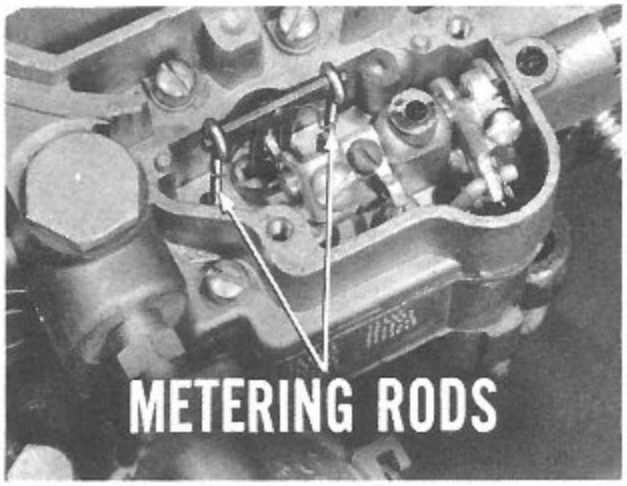
Once in a while you may get a report of "surging" between 30 and 40 mph while driving at a constant speed. Some owners say it feels like the car's being towed by a rubber band. The band stretches, contracts, and then stretches again.

While dirt could be a factor, here's the important thing to keep in mind. The very things you check for rough idle can also cause surging. So, tag all the bases . . . the manifold heat control valve . . . ignition timing . . . spark plugs . . . air leaks.

Be sure the carburetor assembly screws are tight. Also, in some of the dual carburetors, see that the discharge cluster screws are good and snug. If all these items check out, then the trouble may be inside.

On some of the 2-barrel carburetors, you can change the step-up rods to a size .001" smaller than the ones you remove. That automatically provides a little richer mixture.

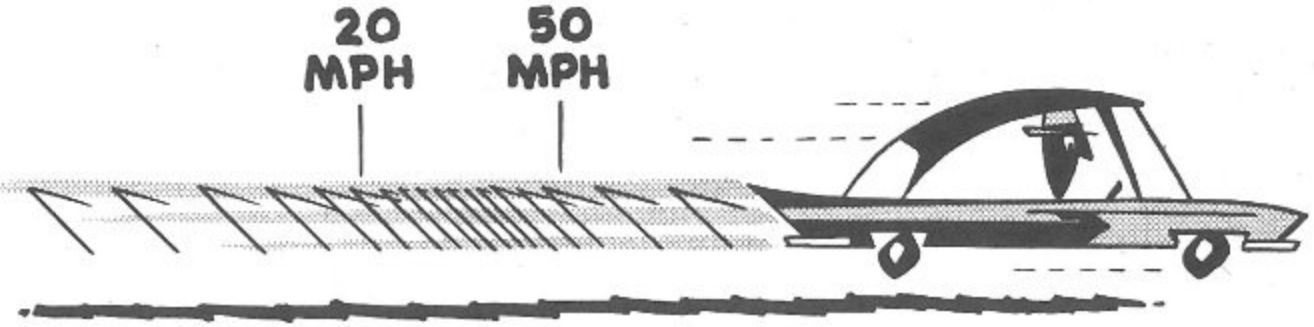


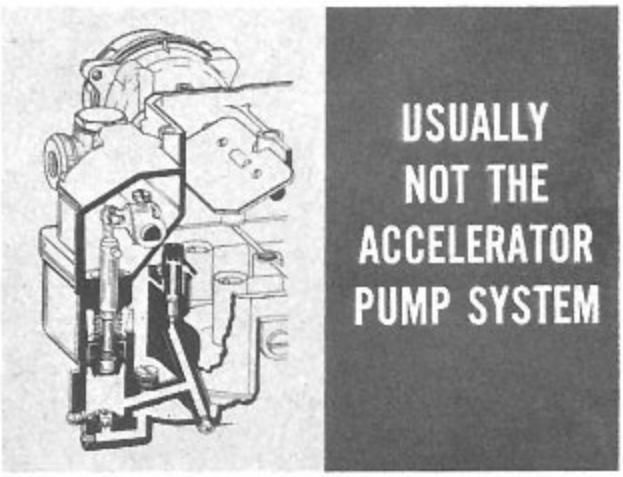


On Chrysler and De Soto 4-barrel jobs, new metering rods with a different size step in the lower speed range are available to relieve this surging condition. These rods carry the Carter No. 75-1278 and the MoPar No. 1676693.

HESITATION ON ACCELERATION

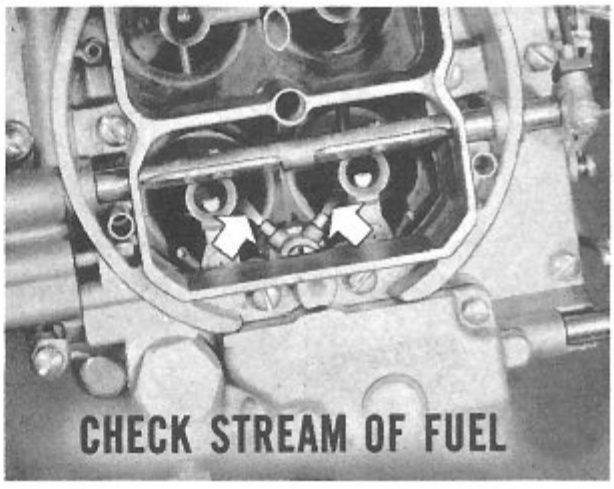
An occasional report of hesitation, or flat spot, on acceleration anywhere between 20 to 50 mph, is due to a temporary starving of the mixture. What makes this so noticeable, and annoying, is that is takes place when the owner tramps on the pedal for greater acceleration.





At first you might think it's due to some fault of the accelerator pump system. However, keep in mind that the accelerator pump discharge is mainly effective while the car is accelerating within the low speed ranges.

Naturally, you'll still want to remove the air cleaner and check the accelerator pump when the engine ignition's turned off. You should make sure the fuel is being discharged straight out into the venturi. If it isn't, you'll have to check out the pump system. But, in many cases, it will be necessary to look beyond the pump system.



In other words, check all the tune-up items which are important when correcting a case of rough engine idle. If these are found to be okay, you can then concentrate on the carburetor.

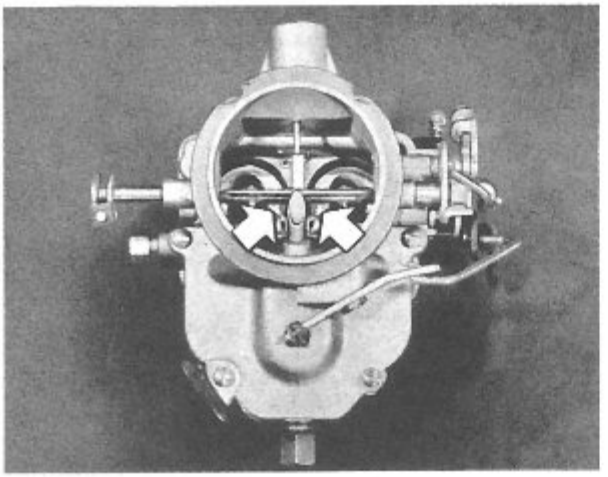
On Chrysler and De Soto 4-barrel jobs, install the metering rods (Carter No. 75-1278 and MoPar No. 1676693) mentioned in correcting a case of "surging".

On these, and on *all* carburetors, check the linkage between the accelerator pedal and accelerator shaft. Make sure the pedal travels far enough to open the throttle valves fully for wide-open operation.

THE ACCELERATOR PUMP SYSTEM— TWO-BARREL CARBURETOR

If your examination shows the accelerator pump system isn't operating properly, you'll have to determine the cause.

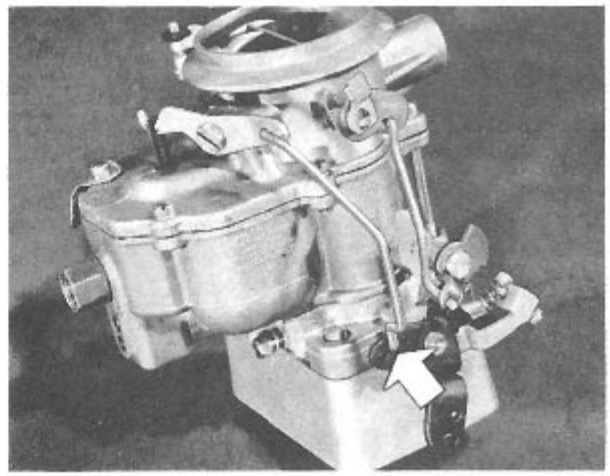
To check this system, remove the air cleaner first. Work the accelerator rod back and forth so you can check the stream of fuel discharged from the pump jet. It should be a heavy stream of fuel, discharged straight out, if the pump system's working okay. If the stream is thin, deflected to one side, or just a dribble from the jet, the pump system needs to be inspected. In a case like this, the pump plunger travel may not be properly adjusted. Perhaps the plunger spring is too weak, or it may have taken a set so it can't put enough push on the plunger.



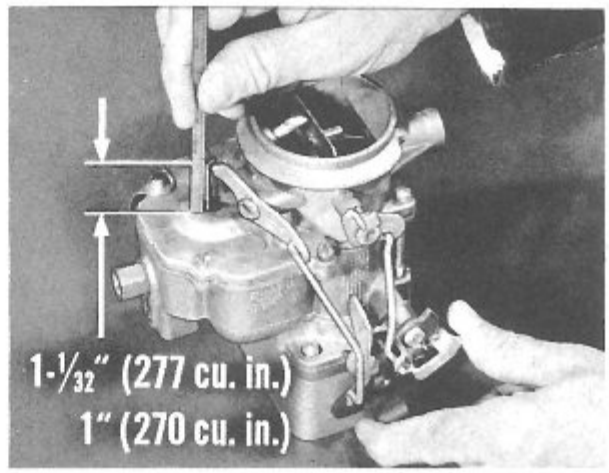
In addition, there may be dirt in the discharge jets and passages, or grit in varnish deposits on the check ball seat that won't let the ball seat properly. Varnish in the passages, too, might be a possible cause. If cleaning is not the answer, here's how to check and adjust the pump.

Since cleaning the carburetor requires disassembly, and the trouble may be due to improper pump adjustment, it would be advisable to check the adjustment first. Here's how to do it.

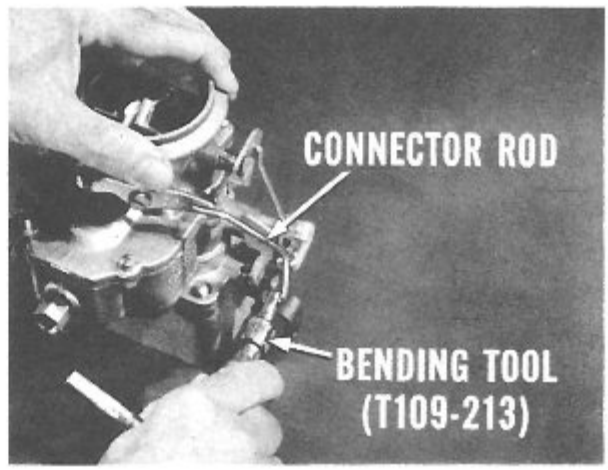
Adjusting The Pump. Turn out the idle speed adjusting screw and open the choke valve to seat the throttle valves completely in their bores. Check to see that the pump connector rod is assembled in the center hole of the throttle lever.



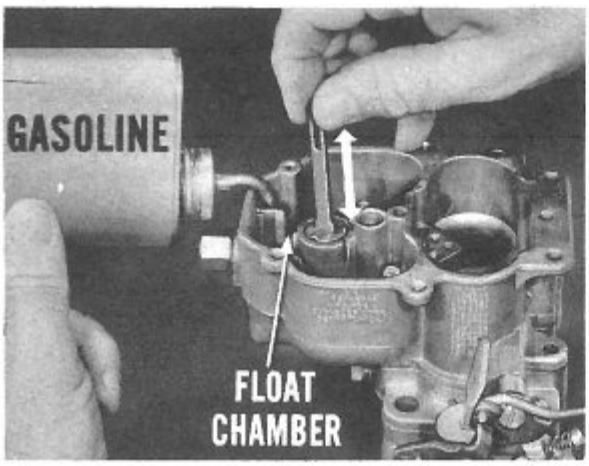
Next, close the throttle valves and measure the distance between the top of the float bowl cover to the end of the plunger shaft. On 277 cubic inch engines, this dimension should be $1\frac{1}{32}$" plus or minus $\frac{1}{64}$". On 270 cubic inch engines, it should be 1" plus or minus $\frac{1}{64}$".



If you don't get those specified dimensions, use the bending tool (T-109-213) to carefully bend the connector rod at the lower angle to obtain the proper adjustment.



If this doesn't improve pump action, remove it from the engine and place it on a repair stand on the bench. Cleaning or installation of new check valves may be required. Also, the plunger spring might have to be replaced.



Next, remove the air horn assembly and discharge cluster. Be sure the pump discharge check ball is in place. Remove the plunger from the air horn and put it in the main body pump well. Squirt a little gasoline in the float chamber. Work the plunger up and down several times to expel air from the pump passage.

Then, hold the discharge needle down and apply pressure at the plunger. If fuel is discharged from either the discharge or the inlet check valves, the valves aren't seating, probably due to dirt. In that case, you'd clean the valves and pump passages with solvent and dry them off with compressed air.

After cleaning, repeat the valve test to see if the valves are seating. If there's still some leakage, replace the valves. Compare the plunger spring with a new one from stock. If the spring looks weak, or has taken a set, replace it and then reassemble the carburetor.

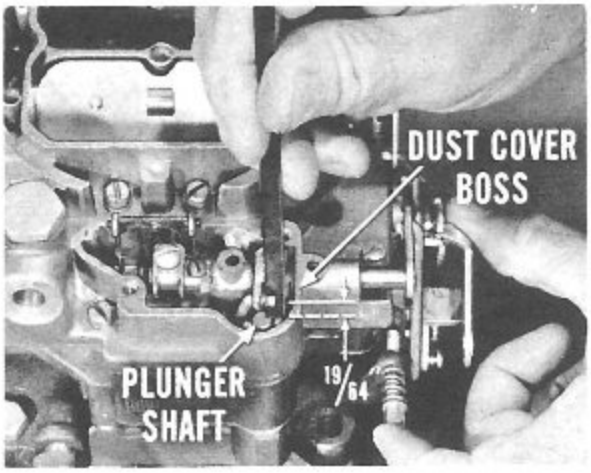
After installing the carburetor, work the throttle rod and check the stream of fuel before you put the air cleaner back on.

THE ACCELERATOR PUMP SYSTEM— FOUR-BARREL CARBURETOR

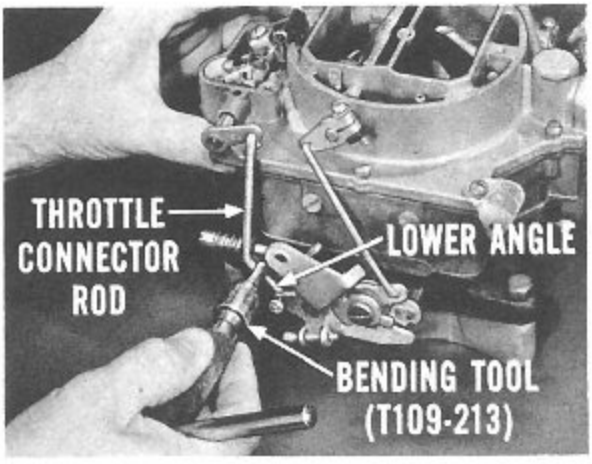
Make the same preliminary checks you made on the two-barrel carburetor. See that the streams of fuel are being discharged properly. If they are not heavy streams, or are not discharged straight out, the pump adjustment should be checked. Here's how it is done.

Adjusting The Pump. Remove the dust cover from the air horn. Next, back off the idle speed adjusting screw so you can fully seat the primary throttle valves in their bores. While you're at it, make sure the fast idle screw isn't holding the valves open.

With the primary valves seated, there should be a distance of $^{19}/_{64}$" from the top of the plunger shaft to the top of the dust cover boss.



If you don't get that, use the bending tool (Part No. T-109-213) to bend the throttle connector rod at the lower angle if you are working on Chrysler or De Soto, and the upper angle if you are working on Plymouth or Dodge.



Following the pump adjustment, you would recheck the discharge of fuel from the jets by working the accelerator rod back and forth. If the adjustment has not improved the pump action, the trouble may be due to dirt or varnish in the system which would require partial disassembly of the carburetor to check the action of the discharge valve and intake ball. This checking and cleaning is done in the same manner as described previously for the two-barrel carburetor.

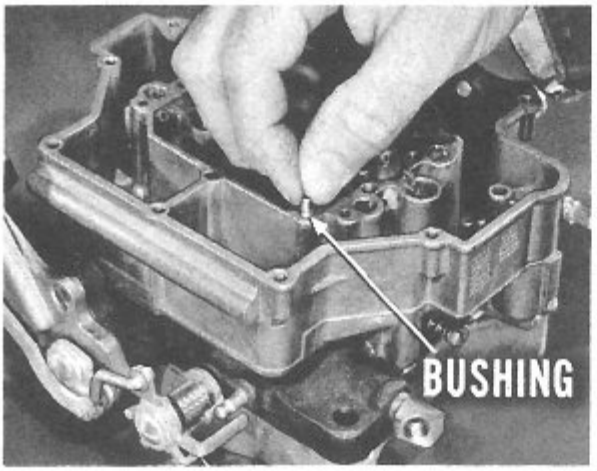
CUTTING OUT OR STALLING ON TURNS— FOUR-BARREL CARBURETOR

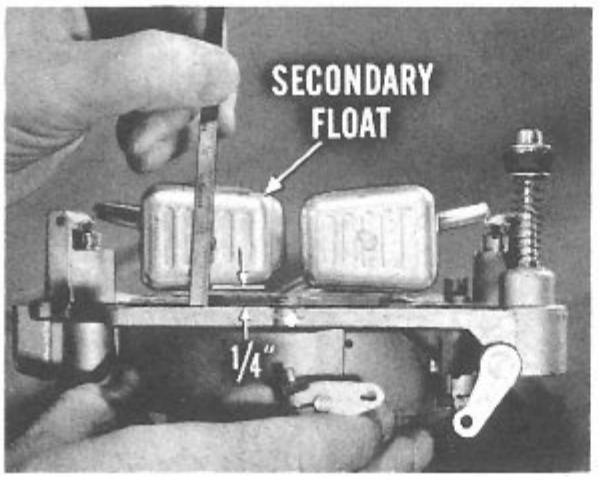
If you come across a report of cutting out, or stalling on turns, it can be traced to one of two things. First, there might be an over-rich mixture due to too high a fuel level caused by the wrong float setting.

Second, there might be a poor seal around the vacuum passage in the bowl cover, causing fuel to come into the choke vacuum passage.

Remove the air cleaner first, then the air horn.

The vacuum passage in the main body is the hole in the float chamber section at the right front corner. Insert a bushing (Carter No. 145-142) into this passage. The bushing is 5/8-inch long. When inserted in the passage, part of it should extend above the main body so it will enter the corresponding passage in the air horn. If you can't secure the bushing, insert a round punch into the hole and roll it around to raise a metal ridge. This will improve the seal between the body and air horn.





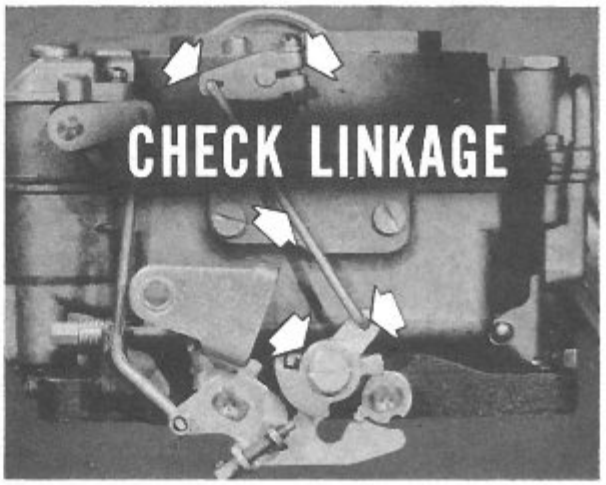
While the air horn is off, check the *secondary* float setting. Standard setting is 3/16". Lower it to 1/4". But don't change the setting of the *primary* float. The standard setting of the primary float is 1/8".

Whenever checking the float settings, always use the proper gauge. See that the floats don't rub on the sides of the bowl. Also, bend the float arm and lip *very carefully* when adjustment is required!

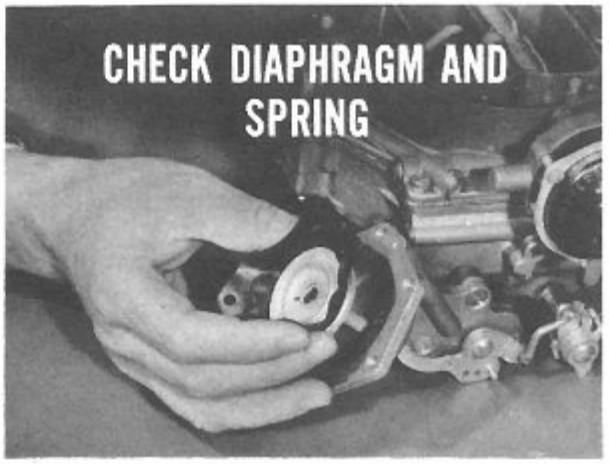
FOUR-BARREL CARBURETOR SECONDARY THROTTLE VALVES— CHRYSLER, DE SOTO

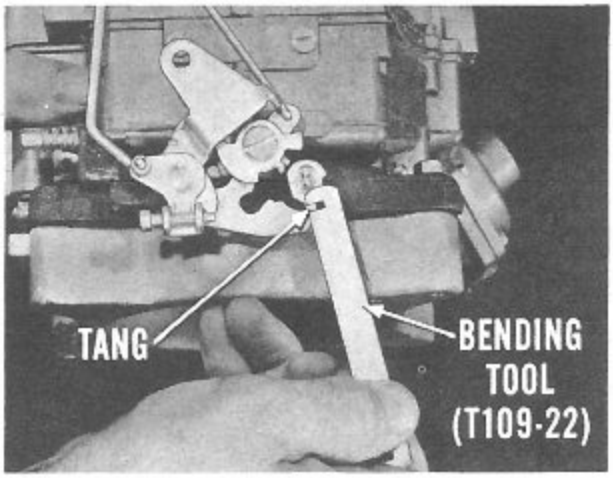
Secondary valves on Chrysler and De Soto 4-barrel carburetors are controlled by a vacuum diaphragm unit. So, if the secondary valves fail to open properly, check for a faulty vacuum diaphragm unit or throttle linkage improperly adjusted or bent. Both checks can be made with the carburetor on the car, after the air cleaner's removed.

Check the linkage first, especially the choke connector rod and throttle operating link for binding, or damage. Perhaps the choke linkage was bent incorrectly during previous service attention.



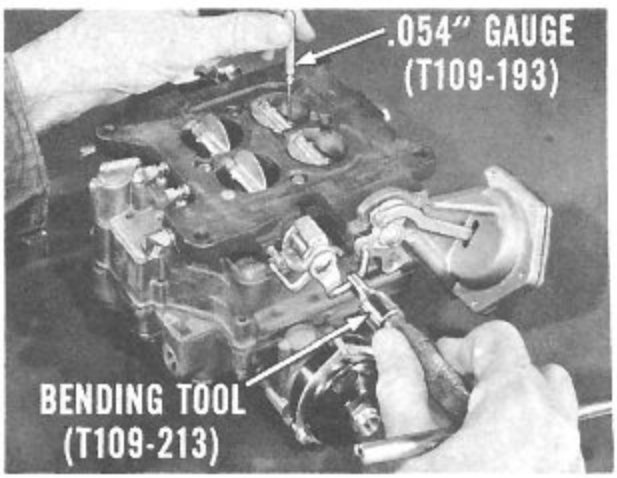
If the linkage is okay, remove the cover from the diaphragm assembly. Look the diaphragm over for puncture, wear, or other damage. Also, be sure the spring hasn't been bent or damaged.

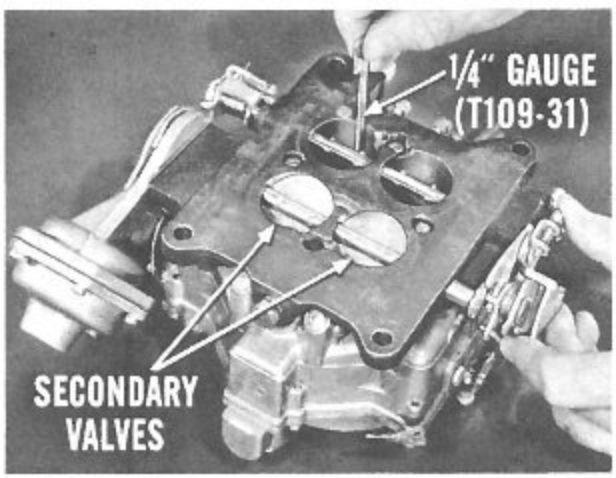




Check the secondary throttle lockout next. With your fingers, move the choke valve to its wide-open position. This should cause the secondary lockout lever to fall free of the tang on the secondary shaft. If it doesn't, bend the tang on the throttle shaft to get the necessary clearance.

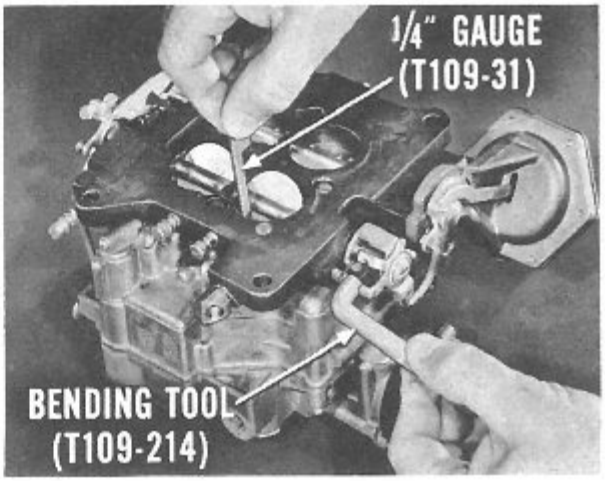
If these checks don't correct engine operation during high speeds, remove the carburetor and put it on a repair stand on the bench. Block the choke valve wide open. Then, invert the carburetor and block the primary throttle valves wide open. You should be able to insert a .054" wire gauge (T-109-193) between the upper edge of the secondary throttle valves (next to the idle port) and the bore. If necessary, use the bending tool (T-109-213) to bend the secondary valve operating rod to get a desired clearance of .045 to .064 inches.





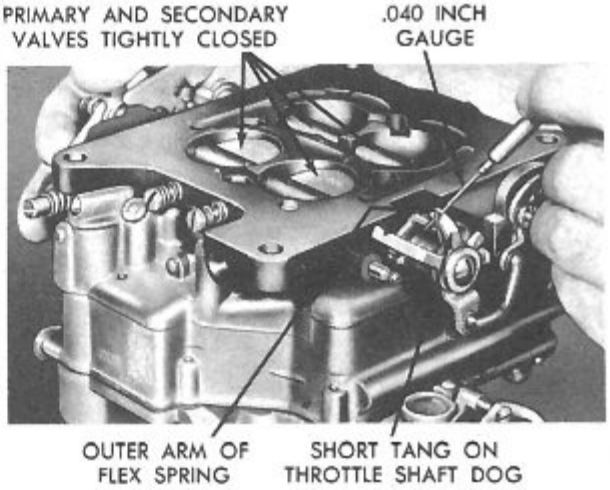
Next, close the primary throttle valves against the ¼" gauge (T-109-31) inserted between the upper edge of the primary throttle valve and bore. In this position, the secondary throttle valves should just begin to open.

If necessary, use the tool (T-109-214) to bend the long tang on the primary throttle shaft dog until the inner arm of the flex spring just contacts the inner lug of the secondary operating lever.



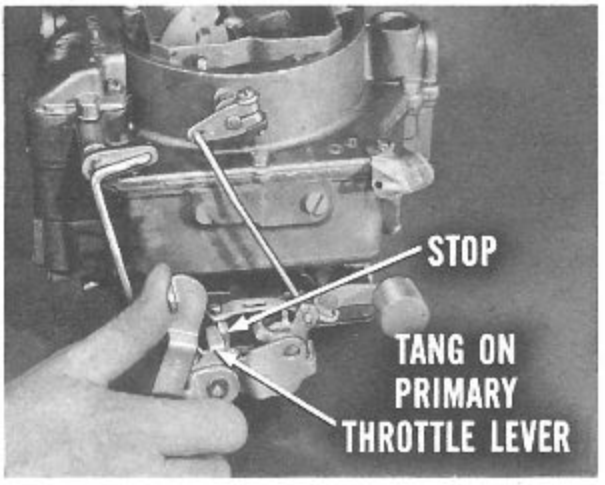
With all the valves closed tightly, you should be able to insert the .005" gauge (T-109-237) between the outer lip on the secondary operating lever and the stop, lug on the primary shaft dog. To adjust, if necessary, bend the outer lip on the secondary operating lever. After bending, be sure the secondary operating lever works freely in any position.

Finally, see if you can insert the .040" wire gauge (T-109-193) between the short tang on the primary throttle shaft dog and outer arm of the flex spring. If necessary, use the bending tool to bend the short tang on the primary throttle shaft dog.



SECONDARY THROTTLE VALVES—PLYMOUTH AND DODGE

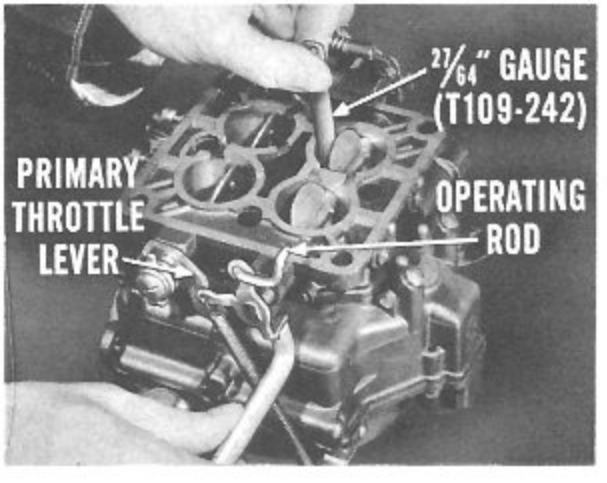
These valves operate by air velocity drawn through the secondary bores at high speeds. When the primary throttle lever is in wide-open



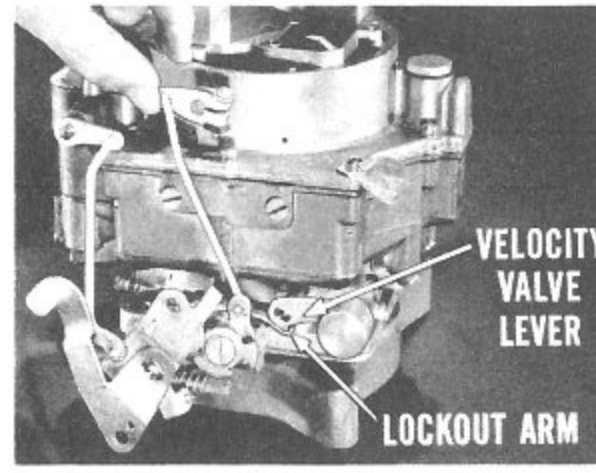
position, the tang on the lever should contact the stop boss on the throttle body when the tang on the secondary throttle lever strikes its stop boss.

If it is necessary to make an adjustment, bend the secondary throttle connector link at the angle, using tool (T-109-213). Note that the secondary valves will not be wide open, but will lack a few degrees of wide-open position.

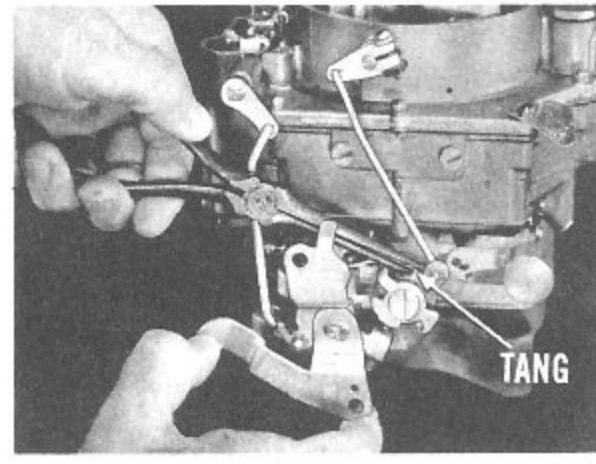
Velocity Valve Adjustment. Remove the carburetor, place it on a repair stand on the bench. Disconnect the secondary throttle operating rod from the primary throttle lever. Invert the carburetor and insert a $^{27}/_{64}$" gauge (T-109-242) in the secondary bore between the lower (inner) edge of the valve and the bore. The tang on the throttle lever should just touch its stop on the throttle body. If necessary, bend the tang on the lever until the $^{27}/_{64}$" gauge can be properly positioned. Finally, reconnect the operating rod to the throttle lever.



Velocity Valve Lockout Adjustment. Do this with the carburetor on the repair stand, after the fast idle adjustment has been completed. When the choke valve is fully closed, the hook end of the lockout arm should make full contact with the velocity valve lever locking step. If it doesn't, bend the lockout arm to get this contact.



Next, open the choke valve slowly. The velocity valves should unlock a few degrees before the choke valve reaches wide-open position. If they don't, bend the tang on the fast idle cam until correct release is obtained.



SUMMARY

Remember—check other engine performance factors before concentrating on the carburetor. After eliminating those tune-up items, turn your attention to the carburetor. Careful handling of every adjustment detail will mark you as an expert technician. Careful handling of the carburetor, too, preventing damage to its many parts, also will stamp you as a Master Technician.

RECORD YOUR ANSWERS TO THESE QUESTIONS ON QUESTIONNAIRE NO. 102

Jamming an idle mixture screw too tightly into its seat may form a ridge on the taper and upset engine idle.

RIGHT 1 WRONG

If you can get a lean and a rich mixture by adjusting the idle mixture screws, but can't get a smooth engine idle, the trouble's due entirely to the carburetor.

RIGHT 2 WRONG

A manifold heat control valve that's stuck open will cause stumbling and hesitation during warm-up.

RIGHT 3 WRONG

A manifold heat control valve that's stuck closed will lead to loss of power, percolation, and hard hot-starting conditions.

RIGHT 4 WRONG

When checking for air leaks into the intake system, be sure to check the screws that hold the carburetor sections together.

RIGHT 5 WRONG

Adjustment of the power brake pedal linkage has no effect on engine idle performance.

RIGHT 6 WRONG

Valve lash on an engine using mechanical tappets has no effect on engine idle.

RIGHT 7 WRONG

An air leak at the plug in the end of the vacuum piston cylinder will cause a delay in opening the choke valve.

RIGHT 8 WRONG

On an engine equipped with PowerFlite, loosen the transmission throttle linkage before adjusting engine idle speed.

RIGHT 9 WRONG

Throttle valves, damaged by careless handling or improperly set so they don't operate in the same plane or close tightly, can affect engine idle.

RIGHT 10 WRONG

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