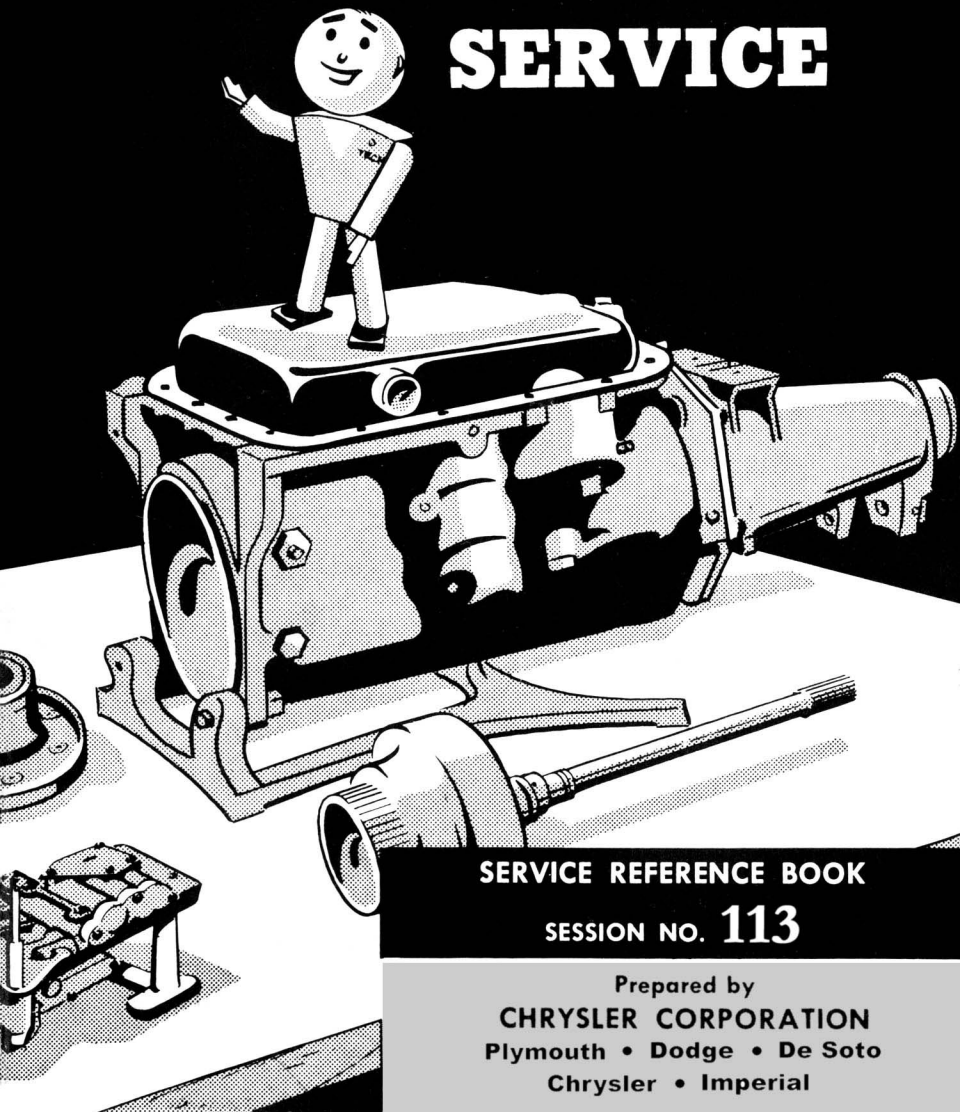


TORQUE-FLITE TRANSMISSION SERVICE

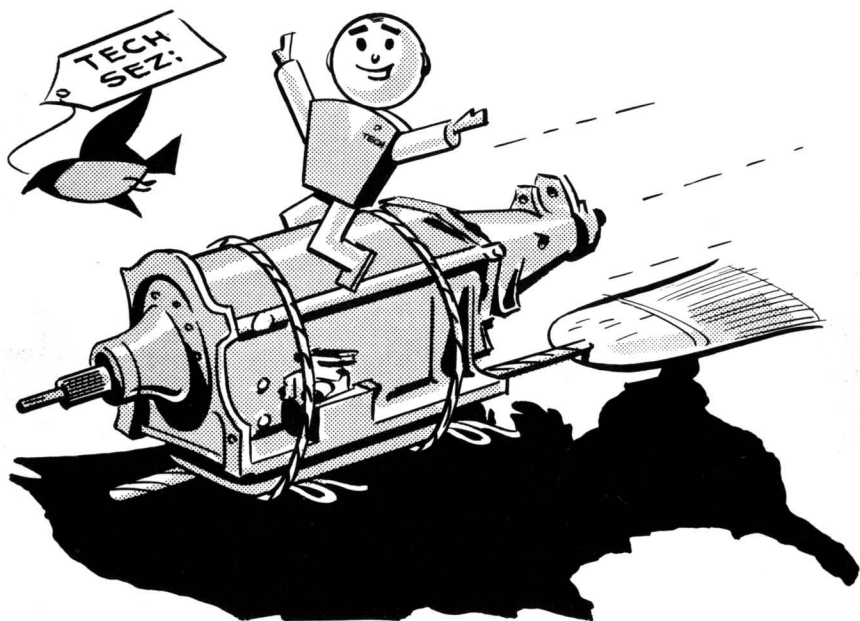


SERVICE REFERENCE BOOK

SESSION NO. **113**

Prepared by
CHRYSLER CORPORATION
Plymouth • Dodge • De Soto
Chrysler • Imperial

"TORQUE-FLITE TRANSMISSIONS ARE SWEEPING THE COUNTRY!"



On passenger cars, automatic transmissions are rapidly becoming standard equipment. The standard transmission is becoming the exception. Torque-Flite, especially, is growing more popular with our owners. In fact, it's sweeping the country! As a result, we have another opportunity to be of greater service to our customers.

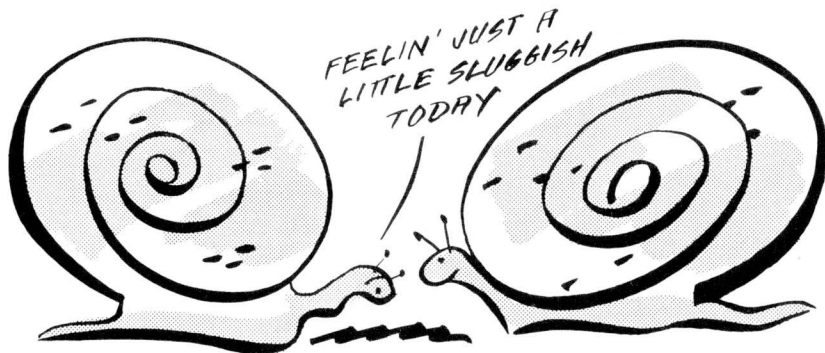
But to make the most of this opportunity, we have to be right up to snuff on all of the recent improvements in the Torque-Flite transmission, and how they may affect our service procedures.

This reference book, therefore, provides just the information you need to offer owners first-class transmission service.

Here's where you'll find the latest Torque-Flite tips that will help make your work easier:

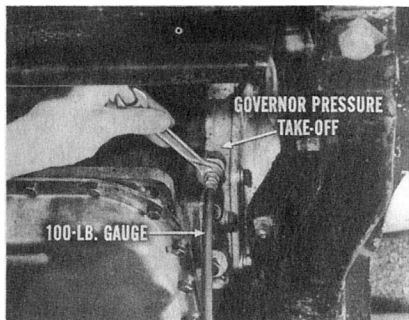
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"NO-REVERSE" CONDITION

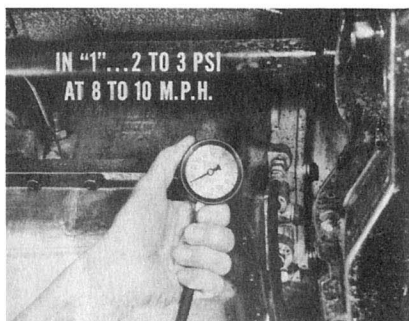


Suppose an owner reports that he can't get the transmission into Reverse. Or, suppose the owner said the car was sluggish on acceleration. Let's say it seemed to start off in Direct Drive instead of

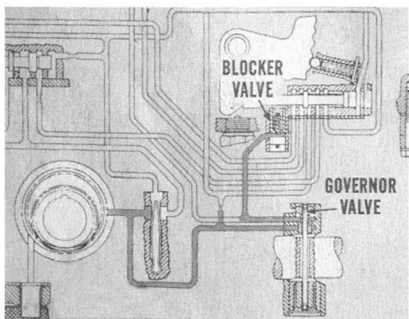
Breakaway. In other words, there was *no* downshift from third to first and there might be a report of an occasional *erratic* downshift.



In a case like that, you'd check governor pressure first. So, raise the car up on the hoist with the wheels free to turn. On the *left* side of the output shaft support, remove the tap plug from the governor pressure take-off hole. Connect a 100-lb. Pressure Gauge (C-3292).



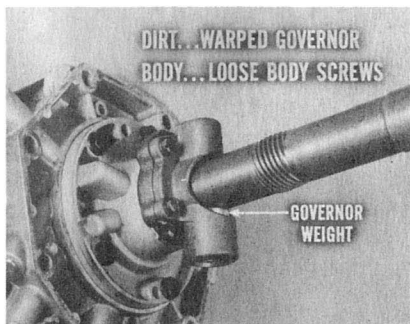
Next, start the engine. Push in the "1" button. You should read no more than 2 or 3 psi at 8 to 10 miles per hour. More than 3 psi means that the governor valve is open, probably because the governor weight is stuck.



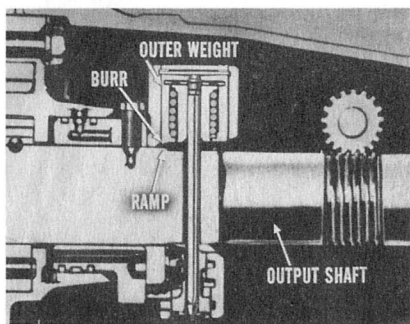
As you probably know, an open governor valve admits pressure to the reverse blocker valve. This, in turn, keeps the transmission from shifting into Reverse. As a result, you'll have to remove the governor for cleaning and inspection.

That calls for disconnecting the propeller shaft and removing the transmission extension.

From past experience you'll recall that dirt can cause the governor weight to stick. Also, a warped governor body . . . or loose body screws can set up the same sticking condition.

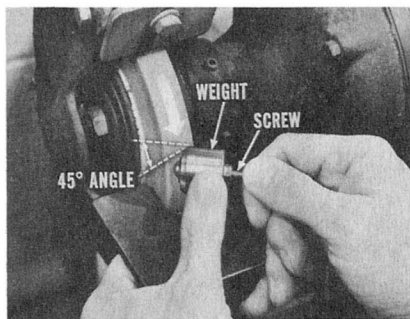


In addition, a burr on the inside edge of the governor outer weight can cause it to stick. Such a burr will develop if the weight hits the ramp on the output shaft. The burr will limit inward movement of the weight and the governor valve will stay open.

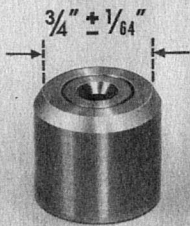


Once you remove and disassemble the governor, you can check the weight to see if it has free movement in the body. If you do find a burr on the weight, it has to be removed. Also, a chamfer should be ground to keep the burr from forming again.

Here's how you grind the chamfer. Put a 2" No. 8 screw through the weight assembly so you can hold the edge at a 45° angle against a grinding wheel. (You can use the governor valve shaft rod if you don't have a No. 8 screw.) Apply light thumb pressure, but let the weight assembly turn by itself as you grind it.



GRIND CHAMFER

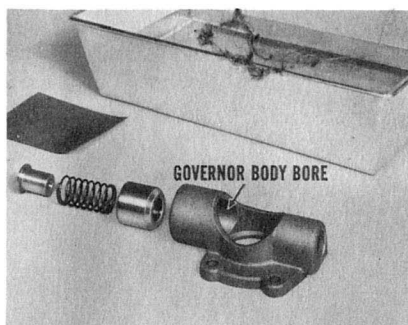


Hold a $\frac{3}{4}$ " diameter on the face of the weight, plus or minus $\frac{1}{64}$ ". Then you'll end up with a chamfer that will adequately clear the chamfer on the output shaft ramp.



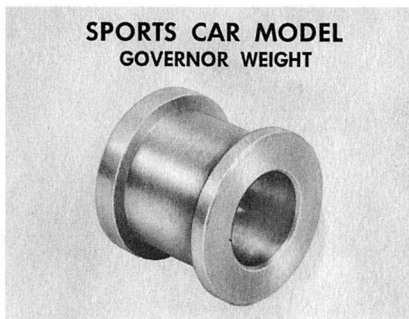
After grinding, make sure the surface is smooth. Hand-file and polish off any grinding burrs. Finally, take the weight assembly completely apart and clean it so it's entirely free of grinding particles.

Incidentally, be sure to inspect the governor body weight bore for nicks and roughness. Use crocus cloth to remove any roughness you may find. Clean the body and assemble the governor so no metal particles will pop up later to cause sticking.

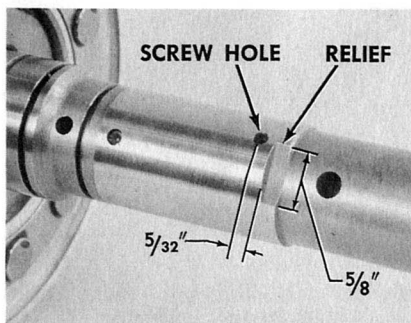


Plymouth Fury, Dodge D-500, De Soto Adventurer, Chrysler 300C.

Now, if you should run into the same condition of a burred governor weight causing "no-reverse" on one of the special sport car models, correction is slightly different. Instead of adding a chamfer on the weight, you should grind a relief on the output shaft ramp. At the same time, you should also remove any burr from the weight. The reason for grinding the shaft is that the governor weight on these models is of a different design.



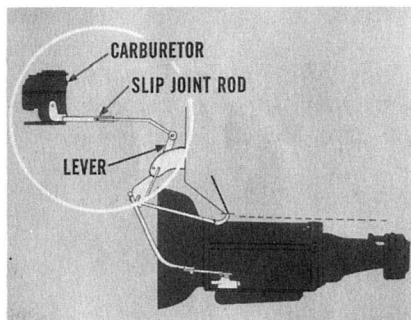
You have to remove the transmission from the car first. Next, disassemble the governor. Then grind the relief on the output shaft chamfer (or ramp) near the governor support locating screw hole. The forward edge of the flat should be at least $\frac{5}{32}$ " to the rear of the screw hole center. The en-



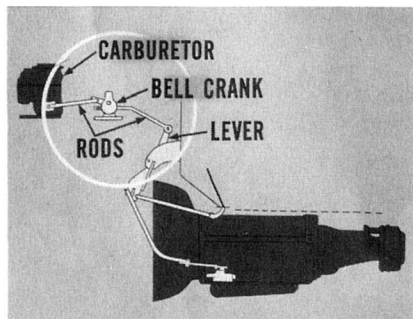
tire relief should be about $\frac{5}{8}$ " long. After grinding, smooth off any burrs and use crocus cloth on the governor body bore if it needs to be smoothed out. Clean the shaft and governor parts as before.

Reassemble the weight and the transmission and install it in the car.

HOW TO ADJUST THE THROTTLE LINKAGE



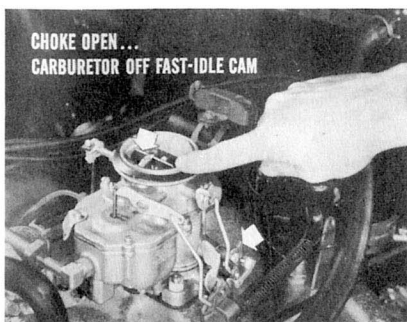
Correct throttle linkage adjustment is one of the most important items in proper transmission performance. On the Torque-Flite unit, two basic types of linkages are used. One of them uses a two-piece slip-joint rod between the carburetor and accelerator shaft lever on the dash panel.



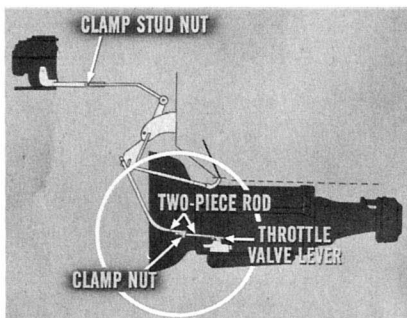
The other linkage setup uses an intermediate bell crank mounted on the intake manifold. It also uses two rods: one from the carburetor to the bell crank; the other from bell crank to the accelerator shaft lever on the dash panel.

On all models, first check the linkage for binding. Make any correction needed to remove interference or sticking. Start the engine and let it run until it reaches normal operating temperature. Then shut it off.

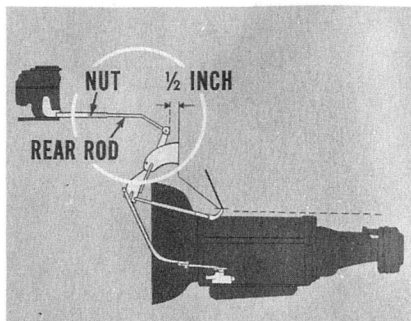
Remove the air cleaner and check to see that the choke is open, and that the carburetor is off the fast-idle cam. Then, hook up a tachometer, start the engine again, and let it idle.



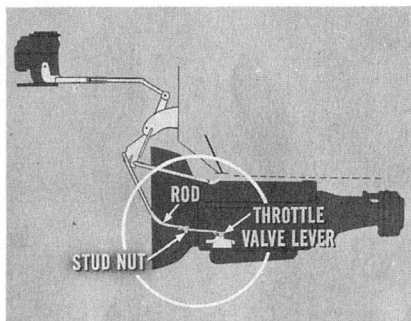
To adjust the slip-type joint rod throttle linkage, first loosen the nut on the clamp stud that holds the two rods together. Down along the side of the transmission, loosen the clamp stud nut that holds the two-piece rod which connects the transmission throttle valve lever.



Now, with the linkage loose, and the transmission in Neutral, adjust engine idle at 475 to 500 r.p.m.

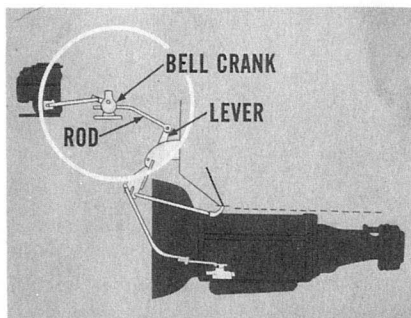


Next, push the rear rod backward to get about $\frac{1}{2}$ " clearance between the dash panel and the accelerator shaft lever. Hold the rods in that position, and tighten the clamp stud nut.



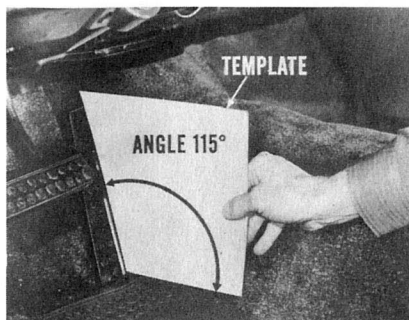
Then, push the throttle valve lever on the transmission *forward* to its closed position. Pull the forward half of the rod back just enough to remove the slack, and tighten the clamp stud nut.

Go back to the upper linkage and loosen the clamp stud nut again. Push the rear rod rearward lightly to take out any slack, and tighten the clamp stud nut.

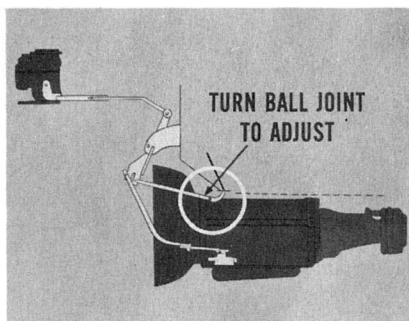


Follow the same general procedure on the linkage type that uses the two rods and intermediate bell crank with just one difference. The upper adjustment is made at the rod from the bell crank to the accelerator shaft lever instead of at the slip-joint of the two-piece rod.

After adjusting throttle linkage on any model, be sure to adjust the accelerator pedal. Use a template to set the pedal angle at 115° . That's the most comfortable foot angle and provides the proper full throttle and kickdown action.

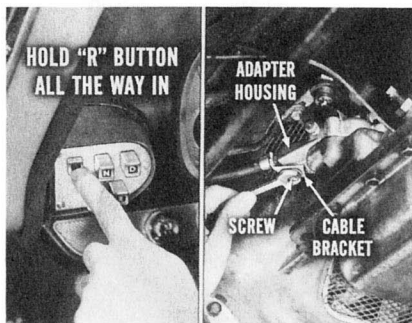
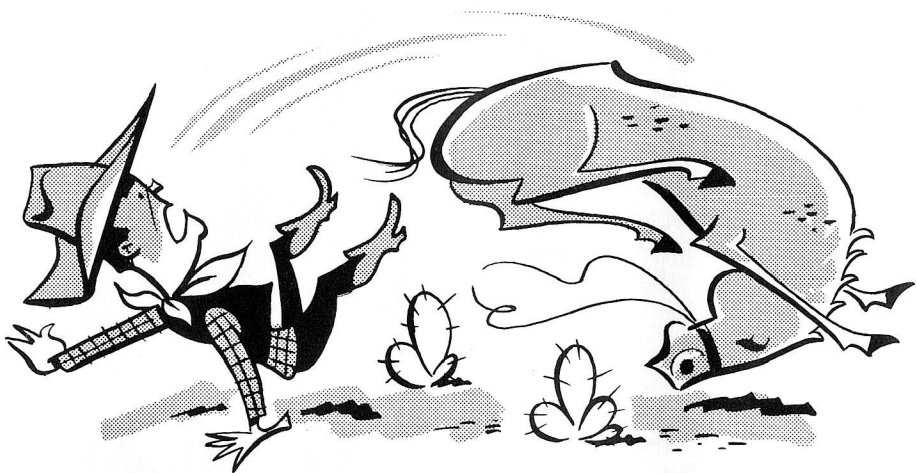


If you ever have to change the accelerator pedal angle, remove the pedal end of the accelerator shaft-to-pedal rod at the pedal lever. Then, turn the ball joint to lengthen or shorten the rod as needed. Next, install the rod and tighten the lock nut if one is used. Besides that, check the rod to see that it's properly lined up and won't bind. Also, recheck engine idle speed and make sure it hasn't changed.



MAKING THE GEARSHIFT CONTROL CABLE ADJUSTMENT

An improper gearshift control cable adjustment can show up in different ways. It can keep the engine from starting. It can cause a Drive in Neutral. There might be no kickdown or normal downshift, and there might be erratic shifting.

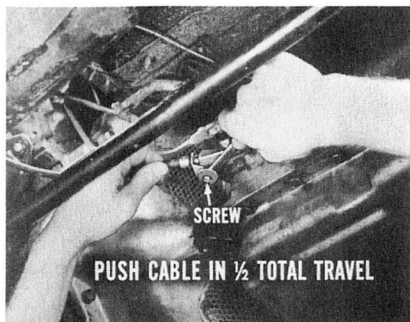


To make this adjustment properly, have someone hold the "R" button all the way in. That removes the slack from the linkage. Loosen the screw holding the control cable adjustable bracket to the adapter housing.



Now determine the total "free-play" of the cable. Push the cable into the housing. Mark it. Then *gently* pull it out. Measure the total amount of cable travel.

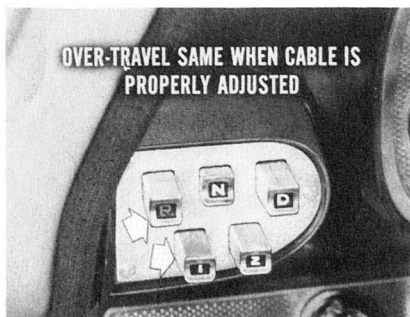
Slowly push the cable into the housing *one-half* of the total travel. Then, hold the cable at that point, and tighten the bracket screw to secure the adjustment.



Always recheck this cable adjustment right after you make it. Push the "1" button in. Then push the "R" button in. Note the amount of over-travel in each case.

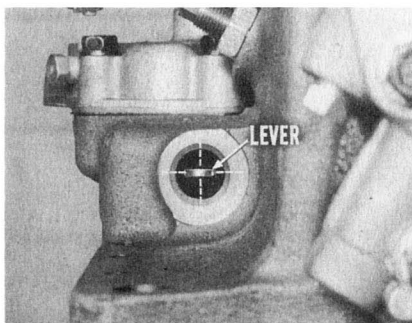


The amount of over-travel will be about the same for each button when you have the control cable properly adjusted. If either the "1" or the "R" button has no over-travel, you'll have to repeat the cable adjustment.

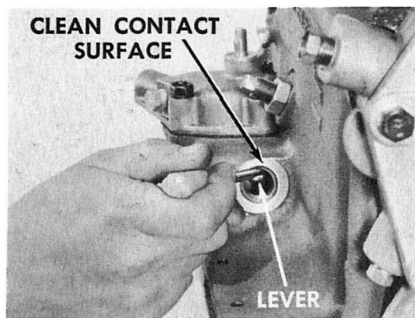


CHECKING THE NEUTRAL STARTER SWITCH

Occasionally you might get a report of *erratic starting*. The engine won't start when the "N" button is pushed in. Yet, you may have just corrected the control cable adjustment and know that it's right.

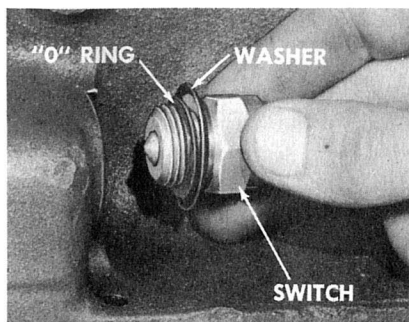


In a case like this, the neutral starter switch may need attention. So, remove the switch and see that the neutral starter switch lever in the transmission is located in the center of the hole where it can make positive contact with the switch.

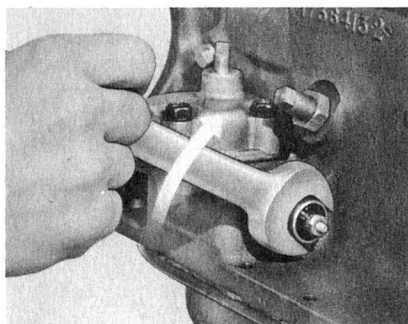


If necessary, use a screwdriver to bend the lever as required to get it properly lined up. In addition, clean the switch contact surface on the transmission so the switch will have a good ground.

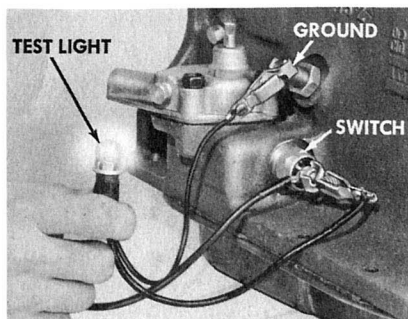
Install the mounting washer on the switch so the concave face is away from the switch. Place the rubber "O" ring on the switch and install the switch in the case.



Turn the switch in until the washer contacts the case. Then, tighten the switch an extra $\frac{1}{8}$ - to $\frac{1}{2}$ -turn. Connect the wire and recheck switch operation.

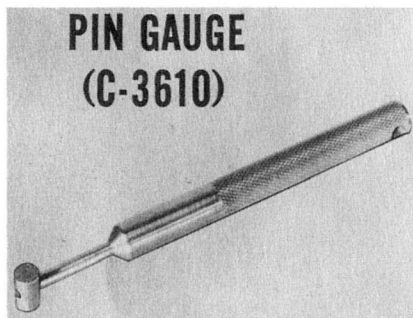


You can also use a test light to check the neutral switch operation. After turning the switch into the case a few threads, connect a test light between the terminal and ground. Then turn the switch in until the test lamp lights. Finally, turn the switch in an additional $\frac{1}{8}$ - to $\frac{1}{2}$ -turn. If you've checked the switch thoroughly and the engine still won't start, you'd better replace the switch.



COMPENSATED THROTTLE PRESSURE ADJUSTMENT

Once in a while you may run across a case where there's a rough, erratic upshift. Throttle linkage and governor pressure are all right, and nothing you've done in addition seems to help smooth out the shift. Up to now, as a last resort we've had to replace the front valve body assembly.

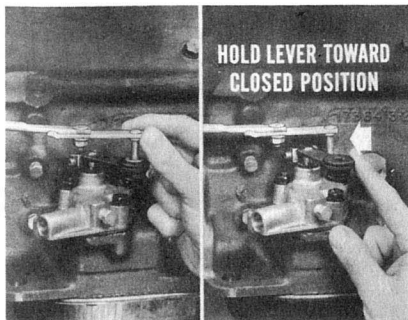


That isn't necessary any more. With a new Pin Gauge (C-3610), it is now possible to set throttle pressure by adjusting the throttle valve stop screw.

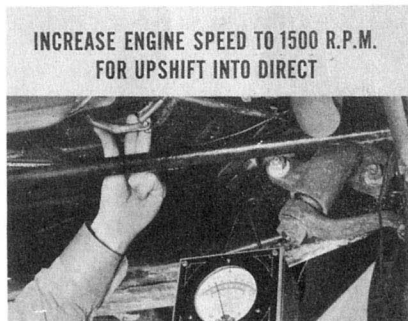


To reset throttle pressure, first hook up a tachometer to the engine. Also, install a 100-lb. Pressure Gauge (C-3292) in the kickdown servo housing *upper* tap.

Next, disconnect the accelerator shaft - to - transmission-throttle lever rod. Start the engine. Push in the "D" button. Hold the transmission throttle lever toward *closed* throttle position against its stop in the transmission.



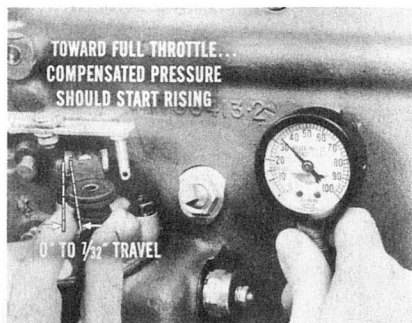
As you hold the lever there, *slowly* pull down on the accelerator pedal lever to increase engine speed to about 1500 r.p.m. This will make the transmission upshift into Direct.



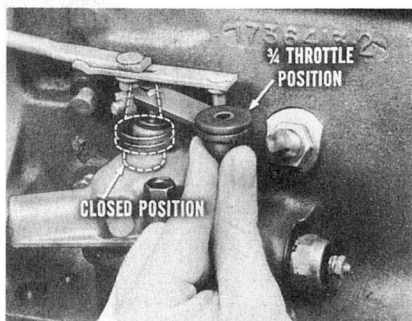
Now, when that upshift takes place, there should be a 26 to 32 psi compensated throttle pressure reading on the gauge. But, don't stop at this point.



Keep *advancing* the transmission throttle valve lever toward full



throttle. Compensated throttle pressure should start *rising* when there's 0 to $\frac{7}{32}$ " travel at the outer end of the lever. If pressure was *above* 32 psi with the lever against the stop, and if the pressure increased immediately when the lever was moved, you'll have to adjust throttle pressure.

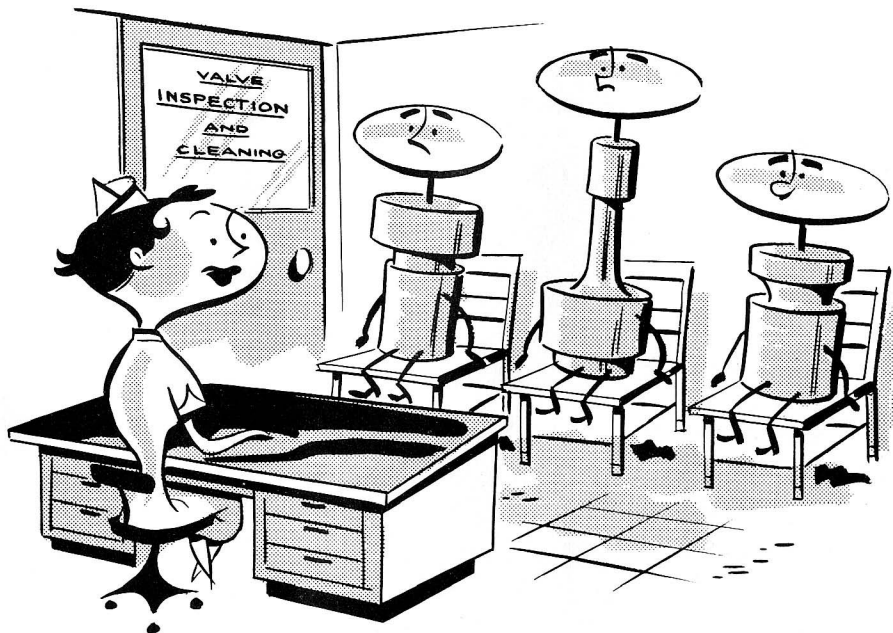


Before you do this, there's one more check you should make while the engine's running at 1500 r.p.m. Suppose you read the 26 to 32 psi, but pressure failed to rise after you moved the lever $\frac{7}{32}$ ". Advance the lever slowly to about $\frac{3}{4}$ throttle position, and return it to closed position.

Compensated throttle pressure in this situation should rise to about 80 to 90 psi, and always fall *smoothly*—without hesitation—to 26 to 32 psi at closed throttle. If

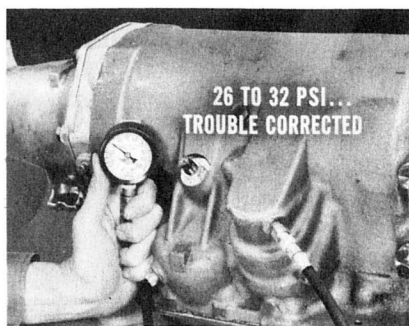


you don't get the 80 to 90 psi throttle pressure, it points to faulty throttle compensator valve or throttle valve operation. That, in turn, will call for draining the transmission, dropping the oil pan, and removing the valve body for cleaning and inspection.

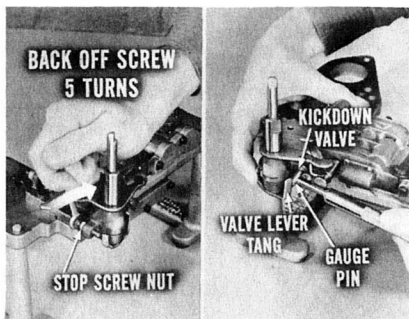


After cleaning and inspecting the valves, reassemble the body and install it in the transmission. Reinstall the oil pan and refill the transmission to its proper level so you can check operation.

Recheck compensated throttle pressure. If you read 26 to 32 psi on the gauge, nothing more has to be done. You've corrected the trouble.

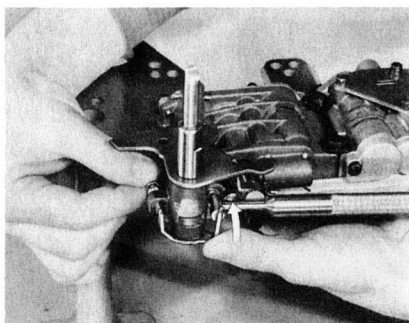


But if you don't get the correct readings, the only thing left to do is reset throttle pressure. And that's where the new pin gauge comes in. Here's how that's done. You first remove the valve body assembly



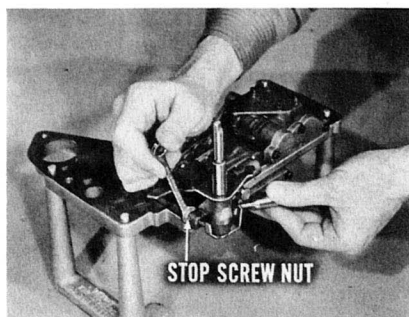
from the transmission, mount it in the stand, loosen the throttle valve stop screw nut, and back off the screw about five turns. Insert the gauge pin between the valve lever tang and the end of the kickdown valve. *Keep the pin in line with the valve.*

Push in the kickdown valve to



compress it against its spring, *bottoming the valve completely inside the body.* As you do that, tighten the throttle valve screw *finger-tight* (do not use a wrench), so all free-play of the lever is removed. *Be sure the adjustment is made with the spring fully compressed and the gauge pin held in line with the kickdown valve.*

Then, with a wrench, tighten the stop screw nut securely, and remove the pin gauge. Reinstall the



valve body, the oil pan, and the throttle linkage. Finally, fill the transmission to its proper level with Automatic Transmission fluid, type "A", and adjust the linkage. Before removing the pressure gauge, recheck compensated throttle pressure to be sure your work has been done correctly.

TIPS ON CHECKING FLUID LEVEL

As a reminder, remember that fluid level should always be checked while the engine is running at idle speed and with the transmission in Neutral.

Temperature of the fluid, also, is an important factor in checking its level. In other words:

When the Fluid's Cold . . . the level should be *up to* the "L" mark on the dipstick . . . and never above.

When the Fluid's Hot . . . the level should be *at or above* the "L" mark, but never above the "F" mark.

All you do, then, is add or drain fluid so the unit will be at its proper level. Keep in mind that automatic transmission fluid will *expand* under high speed and high temperature conditions. If the transmission is over-filled, normal expansion may cause the level to reach the gear train. This could whip the fluid into a foamy mixture. That, in turn, might cause a downshift because governor pressure would drop when foam, instead of solid fluid, enters the rear pump.

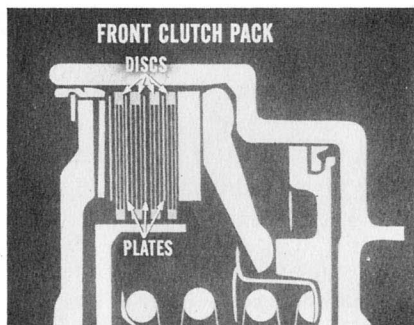


NOTE:

Use no additive compounds in automatic transmission fluids. Some additives are not compatible with those in "Type A" fluid and can form sludge. This can cause the transmission to become inoperative or result in extensive internal damage. Use only "Type A" fluid and remember to drain and refill the transmission every 20,000 miles.

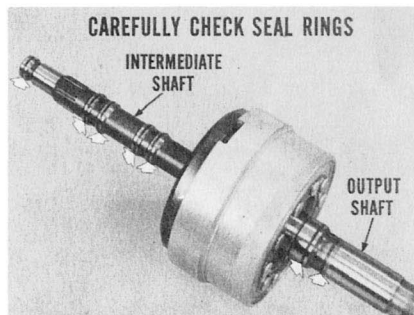
"DRAG IN REVERSE" CONDITION . . . SLUGGISH ACTION

If an owner tells you that the transmission seems to drag in reverse . . . a sort of sluggish reverse operation as though the brakes were on, it might point to the front clutch pack containing the wrong build-up of discs and plates.



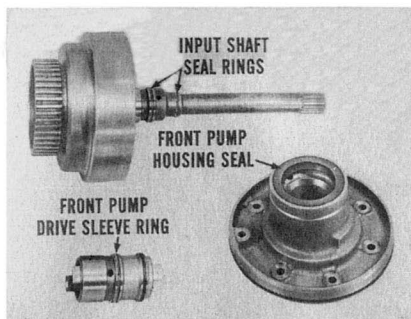
A front clutch pack with the wrong build-up of discs and plates does not have enough clearance and won't let the clutch release properly when the transmission is in Neutral, or when shifted to Reverse. Your best bet in this case is to remove the transmission and disassemble the clutch.

Check Transmission Seals. Incidentally, any time you have the

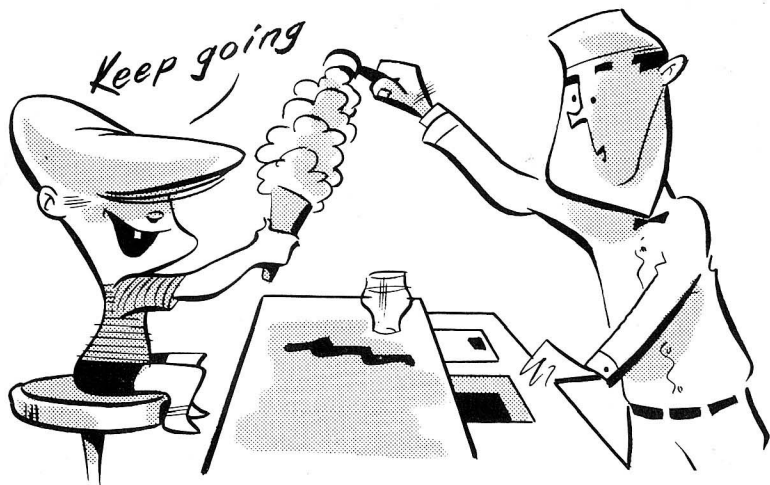
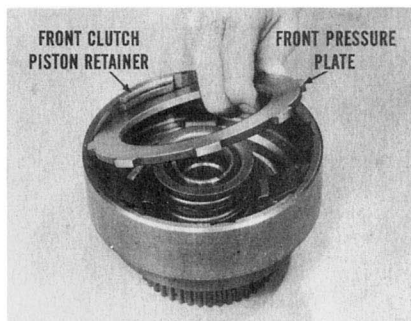


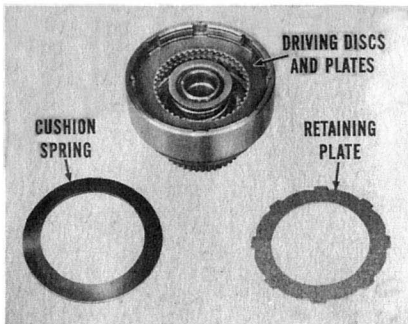
transmission apart, it's wise to inspect the seals, too. For instance, carefully check the interlocking seal rings on the intermediate and output shafts without removing them. There should be no worn or broken interlocks . . . and they should turn freely in their grooves.

In addition, check the input shaft seal rings . . . the front pump drive sleeve seal ring . . . and the front pump housing seal. It's a good idea to replace all rubber "O" rings, too. Once you're sure those seals look okay, then you can concentrate on building up the front clutch properly.

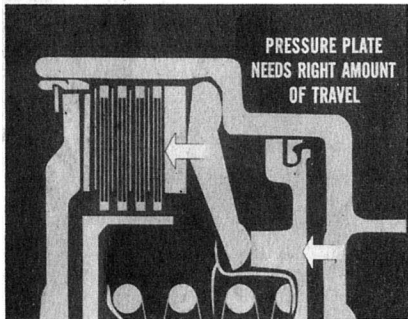


How to Build Up the Front Clutch. With the front clutch piston, the piston levers, the return spring, and spring retainer installed in the front clutch piston retainer, you install the front pressure plate.

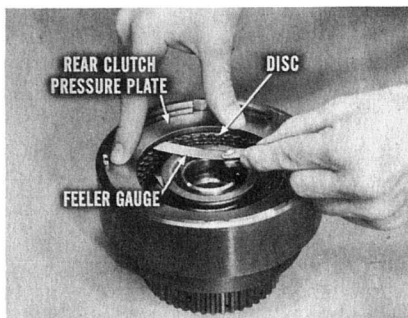




On top of that, you install a driving disc, and then a plate. Keep this up until four discs and three plates are installed. Don't install the cushion spring or the retaining plate just yet.

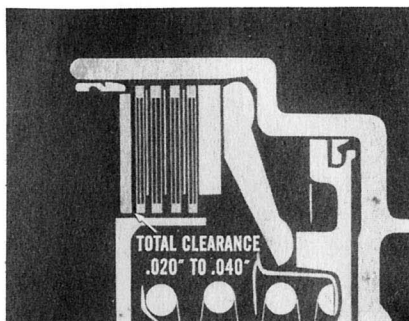


Now, remember that the front clutch pressure plate has to have the right amount of travel when pressure is applied. This means that the proper amount of disc clearance has to be maintained. Not enough disc clearance will cause the clutch to drag. Too much clearance will cause a delayed clutch engagement.



You check that clearance by temporarily installing a *rear* clutch pressure plate, Part No. 1732114, on top of the clutch pack. Hold this rear pressure plate firmly in place by hand, and insert a feeler gauge between it and the top disc in the assembly.

Total clearance should be .020" to .040". If you don't have that clearance, you'll have to replace the discs with any combination of new discs that will provide the necessary .020" to .040".

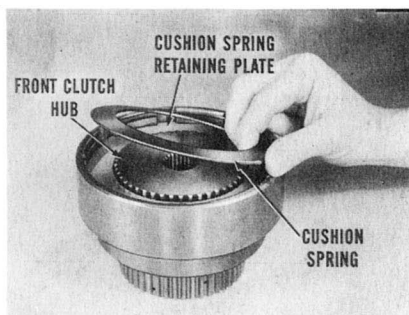


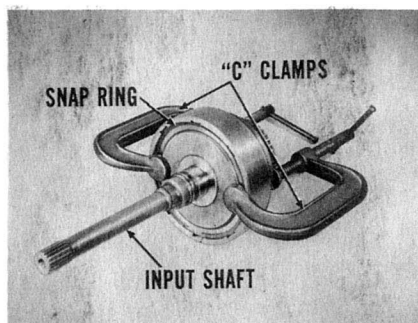
Clutch discs come in three different thicknesses. These sizes and part numbers are as follows:

<u>Part Number</u>	<u>Thickness</u>
1636260	.060" to .063"
1636372	.073" to .076"
1636373	.087" to .090"

With this arrangement available, you won't have any trouble putting the proper combination together.

When you get the right clearance, remove the rear clutch pressure plate. Install the front clutch hub. Then, install the cushion spring retaining plate and the cushion spring. Remember to have the *concave side facing the spring retaining plate*.





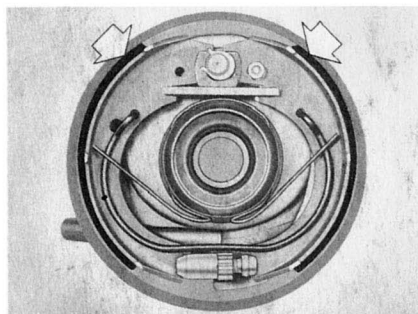
Complete your assembly of the input shaft and snap ring by using two large C-clamps, or an arbor press. That's the story on the front clutch build-up.

A SUSPECTED TRANSMISSION RATTLE WHEN COASTING

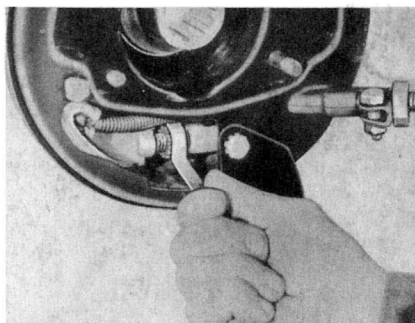


Another condition that may come up occasionally is a rattle that seems to come from the transmission when the car is coasting. An owner might mention that he notices the noise as he lifts his foot off the accelerator. Chances are, the noise is coming from the parking

brake and not the transmission. Check this by pulling the parking brake lever out one to two notches. Drive the car. Then let it coast. If there is now no rattle with the brake pulled out, it means that the brake shoes are making a *partial contact* with the drum when the brake is in fully released position.



You can easily correct this condition by adjusting the parking brake shoes so they'll be properly centered and maintain even clearance with the drum.



A FINAL WORD . . .

Since Torque-Flite transmissions are increasing in popularity, it also increases our opportunity to be of service to owners. The more you know about maintaining the smooth, effortless driving Torque-Flite is designed to provide, the easier your service job becomes.

In addition, owners of cars equipped with Torque-Flite look to us for first-class help on this unit. This gives us an excellent chance to deliver the top-flight work for which Master Technicians are known. Study and effort on your part will go far in helping us to maintain this fine reputation.



RECORD YOUR ANSWERS TO THESE QUESTIONS ON QUESTIONNAIRE NO. 113

On Torque-Flite, a "No-Reverse" condition points to checking the governor pressure first.

RIGHT

1 WRONG

If you read more than 3 psi governor pressure at 8 to 10 m.p.h., it usually means the governor valve is open—probably because the outer weight is stuck.

RIGHT

2 WRONG

An open governor valve admits pressure to the reverse blocker valve and keeps the transmission from shifting into Reverse.

RIGHT

3 WRONG

When adjusting the throttle linkage, loosen the clamp stud nut and push the rear rod back to get about one-half inch clearance between the dash panel and the lever.

RIGHT

4 WRONG

An important step in adjusting throttle linkage is setting engine idle at 475 to 500 r.p.m. with the linkage disconnected and the transmission in Neutral.

RIGHT

5 WRONG

Improper gearshift control cable adjustment can prevent starting, cause a Drive in Neutral, prevent kickdown or normal downshift, and cause erratic shifting.

RIGHT

6 WRONG

To test throttle pressure, disconnect the throttle lever rod, push in the "D" button, pull the pedal lever down to get an up-shift at 1500 r.p.m. and see if you get 26 to 32 psi at the gauge in the kickdown servo housing upper tap.

RIGHT

7 WRONG

If you've tried everything and compensated throttle is still wrong, you can reset pressure by means of a pin gauge (C-3610) at the throttle valve stop screw.

RIGHT

8 WRONG

After building up a front clutch with four discs and three plates, see that there's .020" to .040" clearance between the top driving disc and the temporarily installed rear clutch pressure plate.

RIGHT

9 WRONG

It helps to use small quantities of additives in the transmission fluid to help keep the system clean.

RIGHT

10 WRONG

Litho in U.S.A.