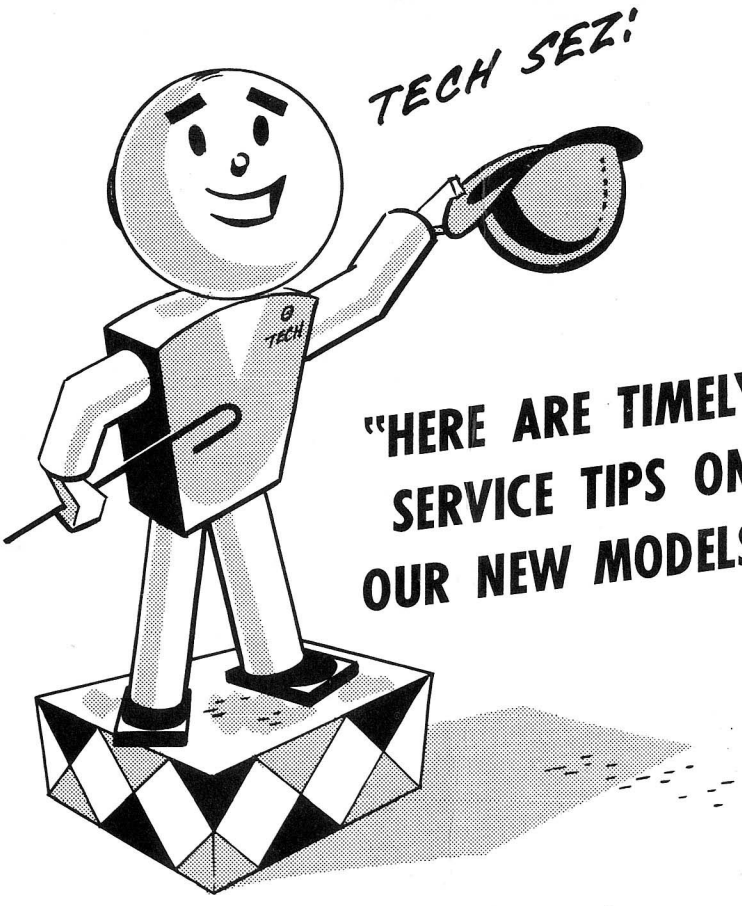
SERVICE REFERENCE BOOK

SESSION NO. 109

SERVICE TIPS ON '57 CARS

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



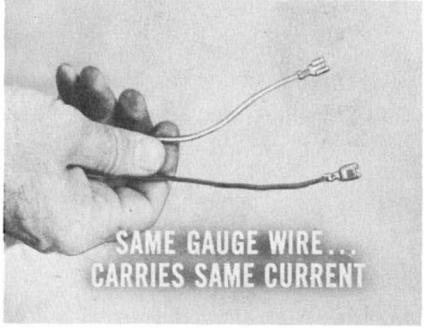
Everybody connected with service is always anxious to get the latest information on new-car maintenance. As new ideas are developed along this line, we're just as anxious to see that you hear about everything that will help. That's why we've collected some up-to-the-minute service facts on the electrical system, our new ammeter, fuel gauge, and our improved power steering pump.

You'll find all this useful information in this reference book, and it's organized in the following easy-to-find sections:

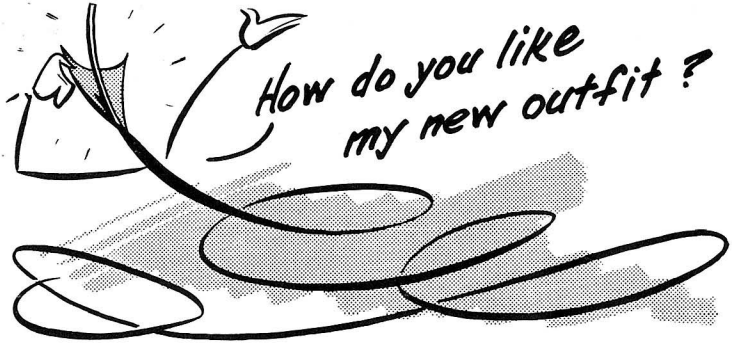
ELECTRICAL WIRING

Plastic Insulation. One look at any of the wiring harnesses on our '57 cars and you'll notice the latest type of plastic insulation in use.

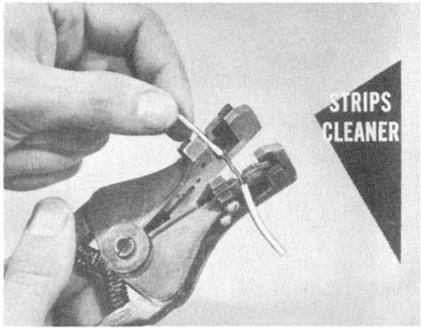
While it may look as though the wires are thinner, they're not. It's only the insulation that's thinner. But it's the same gauge wire we've always used. It carries the same amount of current, and does the same satisfactory job. The new plastic insulation is actually more durable than the cotton braid insulation used on our earlier models.



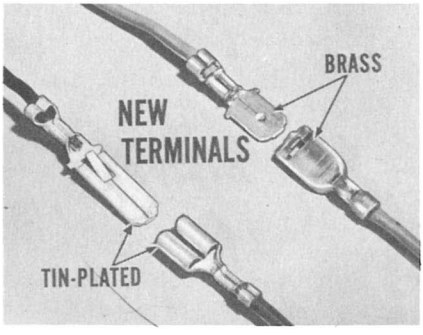
Plastic insulation, also, retains its coloring better—another advantage. Grease, oil, and heat won't fade or change the colors. More permanent colors, naturally, certainly are important when it comes to tracing out any of the circuits.



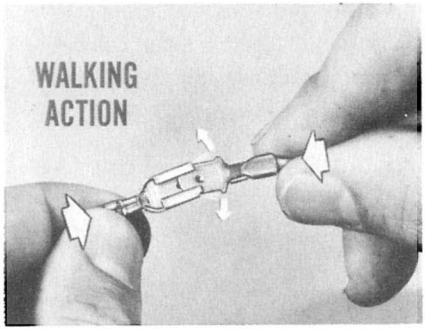
Another thing, plastic insulation strips a lot cleaner than cotton braid covering. You won't have to scrape off any black coating caused by sulphur used in making the rubber coating part of the old-type insulation. Cleaner stripping, incidentally, results in better electrical connections. Clean connections keep down voltage drop and current loss—another important advantage.



New-Type Terminals. Speaking of connections, you'll find new terminals used on the '57 wiring. These terminals are used in practically all but the ignition, generator, and starting circuits. There are two kinds, incidentally; brass and tin-plated terminals. The male part of the brass terminal is shaped like a small blade. The female section has curled sides that put pressure on the blade for a good, tight, electrical connection.



A small dimple on the blade acts as an interlock. Because of this, and other design features, joining and separating the terminal calls for a special knack. To connect the terminal you join the two sections. Then, with a little pressure, and a sort of "walking-action", move the terminal parts from side to side until they lock together.



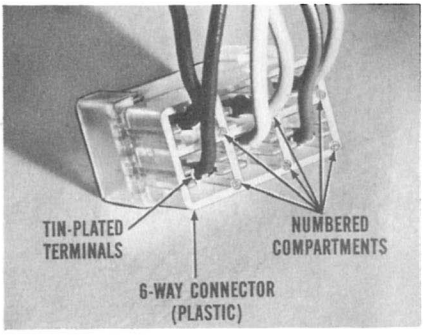
To separate the terminal, "walk" the two sections apart similar to the way you joined them. You'll find that connecting and disconnecting the terminal in this manner is a lot easier than trying to just push the parts together or pull them apart.

Another benefit of cleaner stripping and the new-design terminals is that most connections can be cold-crimped instead of soldered. On any connections you do have to solder, use only a solder gun. You'll find the gun is quicker, neater, and won't hurt the insulation.

NOTE: Always be careful when soldering. Too much heat will melt the plastic. However, the insulation is fireproof.

You'll find soldered connections in the starting circuit. Also, connections in the neutral starter switch, headlamp, generator, and primary ignition circuits are soldered. Other terminals are cold-crimped.

Tin-plated terminals differ from brass terminals only slightly. The tin-plated male blade is a little longer. It has a raised nib, called a lance, which fits against a shoulder to hold the terminal in the plastic connector. To remove the terminal from the connector, insert a narrow-blade screwdriver into the connector to depress the lance.



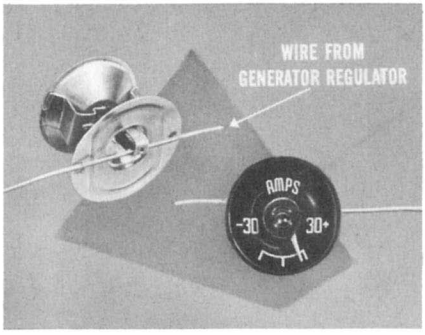
Plastic Connectors. Tin-plated terminals are used in new 6-way polarized connectors made of clear plastic. On the back of the connector, where the terminal enters, each compartment is numbered ("1" through "6") for terminal locations. This makes it easier to follow a wiring diagram.

The 6-way connectors are used to connect the body and instrument panel harness assemblies. On all but Imperial models, these connectors also connect the turn signal indicator harness with the panel harness.

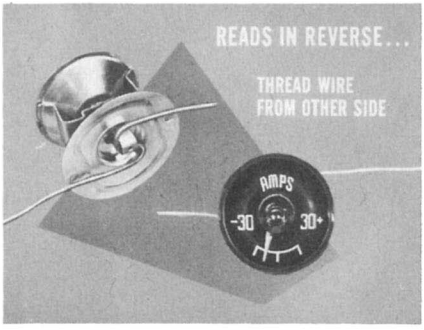
Black plastic connector blocks used are for multiple connections. These black connectors vary in shape and have different numbers of terminals. You match up the shape and terminals with multiple terminals on switches and motors.

LOOP-TYPE AMMETER

On all '57 models except Plymouth, a new, loop-type ammeter is used. It has no actual connection with any terminal. Instead, behind the ammeter is a small metal loop. A wire from the generator regulator passes through the loop. When the generator charges, magnetic lines of force from the wire make the ammeter hand swing over toward the plus side on the dial.

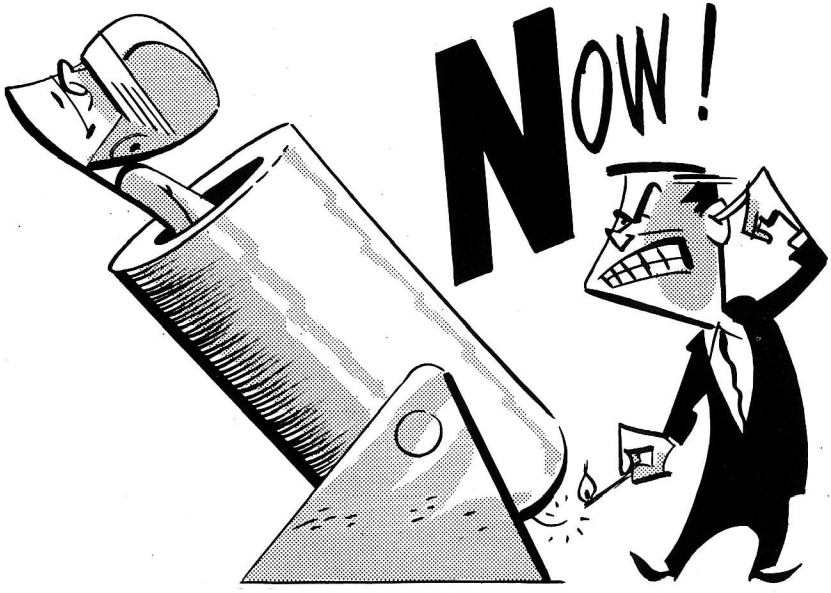


If the ammeter reads in reverse, or shows no indication, it's easy to correct. If you know the generator *is* charging, a reverse reading means the wire through the loop is reversed. So, remove it, and thread it back through from the other side.

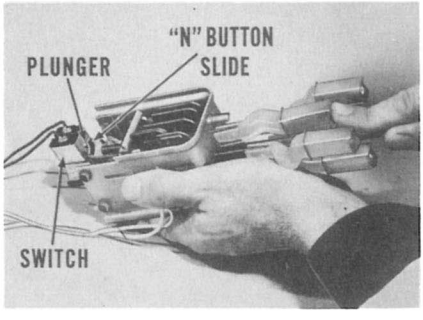


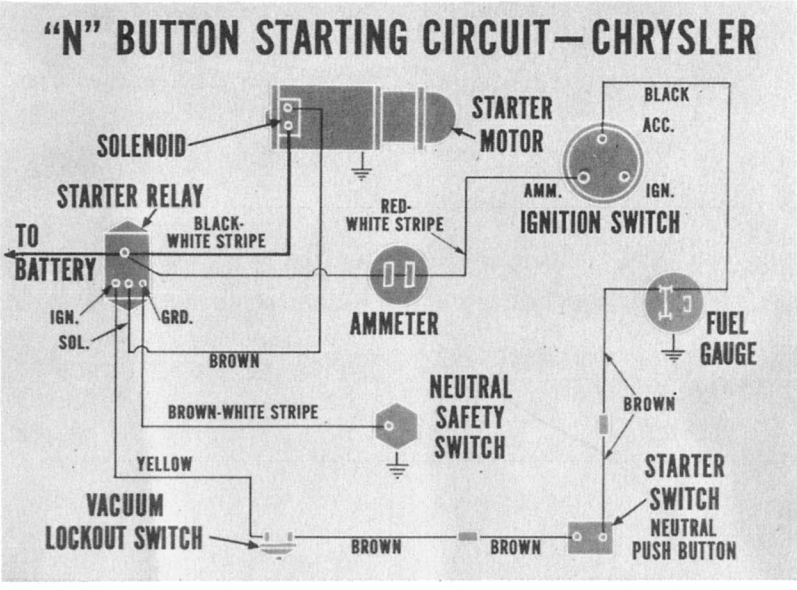
No indication at all means either the generator isn't charging, or the wire from the generator regulator to the starter relay is disconnected. In a case of this kind, you'd first make sure the regulator wire *is* connected. Then, get the tester and see if the generator *is* charging. If everything's okay, but the ammeter still doesn't register, replace the ammeter.

"N" BUTTON STARTING CIRCUIT WITH TORQUE-FLITE TRANSMISSION



Push-button starting, as you probably know, is another new electrical feature on the Chrysler, Imperial and Dodge cars with Torque-Flite transmission. The starter solenoid circuit is closed by *over-travel* of the "N" button. In other words, after normal travel of the "N" button for a shift to neutral, the end of the slide contacts a spring-loaded plunger. This plunger bridges contacts in a switch to complete the starting circuit. De Soto and Plymouth engines are started with the ignition key, as before.

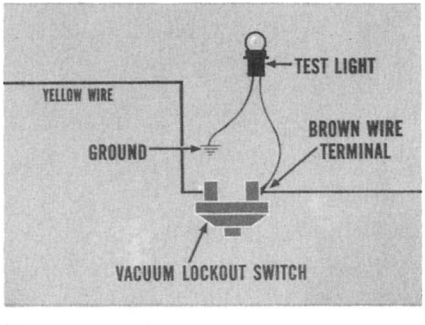


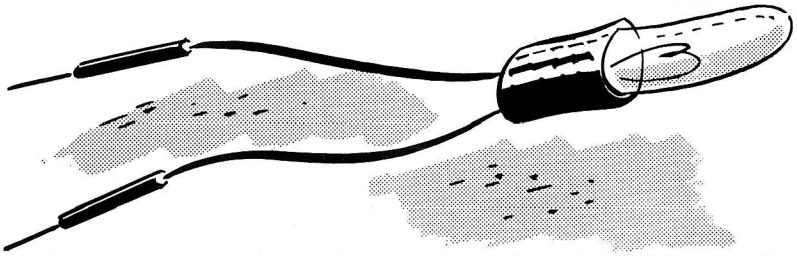


Now, if the car doesn't start when the "N" button is pushed in to the "start" position, you'll have to use a test light to check the starting circuit.

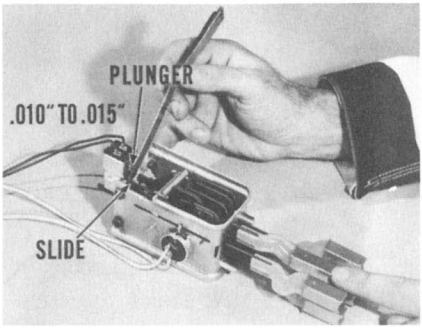
TESTING THE CIRCUIT

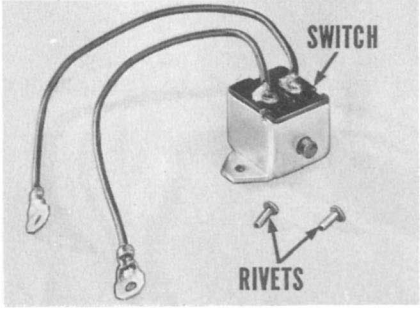
Starter Switch. The first test is of the starter switch. Connect the test light from the *brown* wire terminal of the vacuum lockout switch, and to a good ground. If the test lamp lights, you'll know the circuit is good up to that point. If the test light doesn't light, you'd have to remove the push-button assembly and check the starter switch.





First, check the clearance between the end of the "N" button slide and the end of the switch plunger. Clearance should be .010" to .015". Bend the flange on which the switch is mounted to get the .010" to .015" clearance. Then the switch plunger will have the right travel to close the switch. Test the circuit again, after making the clearance adjustment. If the switch closes, but the test light still doesn't light, then you'd have to replace the switch.

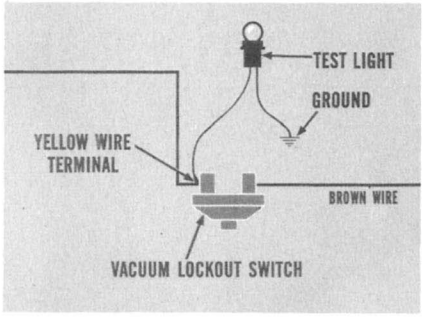




Replace Starter Switch. To do this, drill out the two rivets holding the switch on the flange. The Replacement Switch Package, Part No. 1779888, consists of a new switch and two soft tubular rivets. Install the new switch on the housing flange.

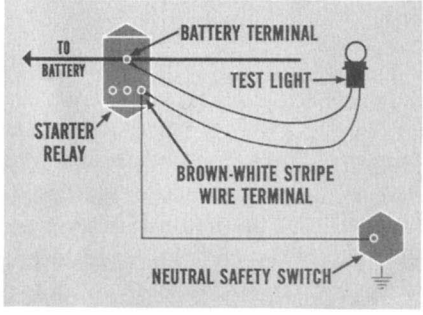
After replacing the switch, you know you have a complete circuit down to the vacuum lockout switch. If the car still will not start, test the lockout switch.

Vacuum Lockout Switch. Connect the test light between the yellow wire terminal of the lockout switch and a good ground. If you get a light, the lockout switch is okay. If not, you'd have to replace the lockout switch.

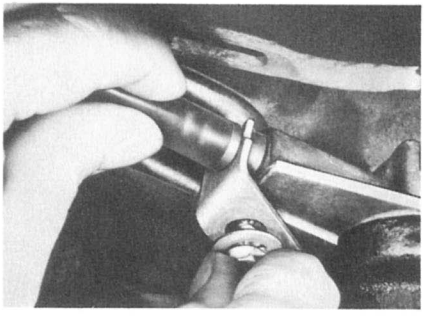


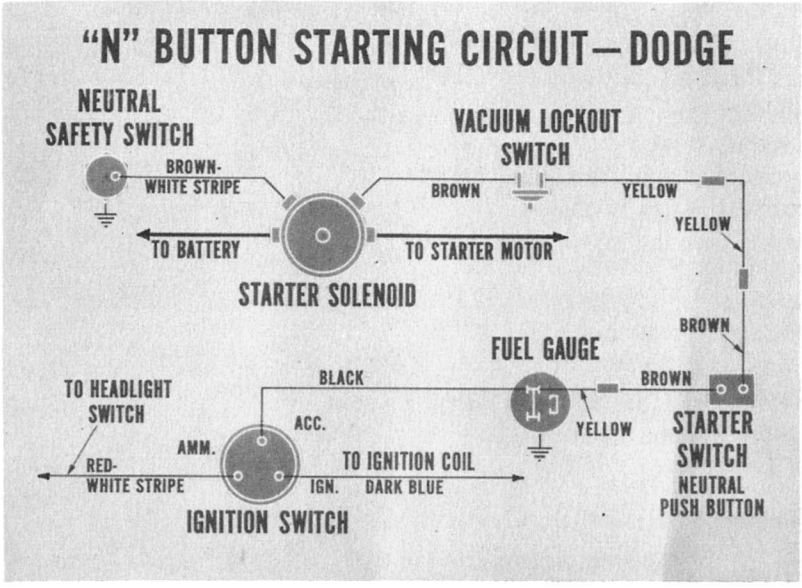
There's still one more point where there might be an open circuit keeping the engine from starting . . . and that's the neutral safety switch on the transmission.

Neutral Safety Switch, Chrysler Models. You can check this on Chrysler models by hooking the test light between the battery terminal of the starter relay, and the brown-white stripe wire terminal. If the light lights, the neutral switch is good.

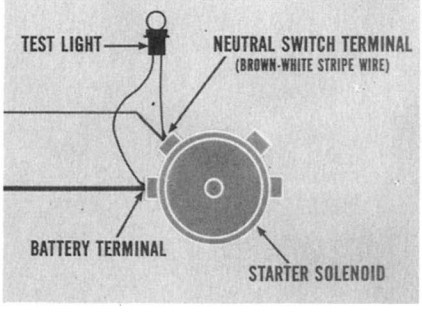


If the test light doesn't light, check the cable adjustment first. If this adjustment is okay, but the test light still doesn't light, replace the neutral switch on the transmission.

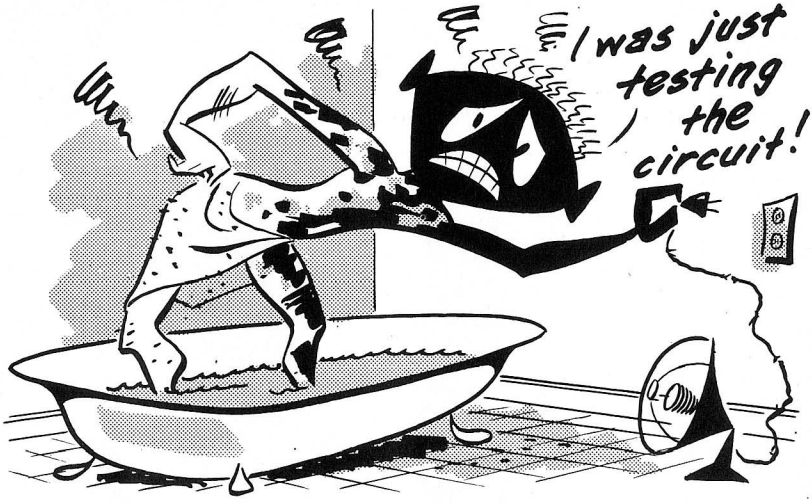




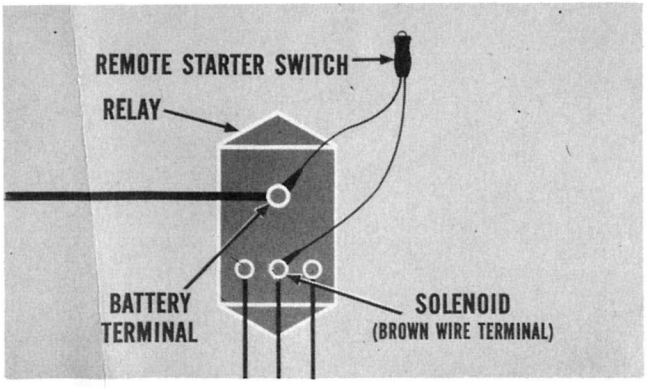
Neutral Safety Switch, Dodge Models. On Dodge, you'd follow the same test procedure you used on the Chrysler circuit—up to the testing of the neutral safety switch. Dodge, as you know, doesn't use a starter relay. So, your test light connection should be made at the starter solenoid.



Connect the test light between the battery terminal of the solenoid and the neutral safety switch terminal. That's the terminal with the brown and white stripe wire. If the light lights, the switch is good.

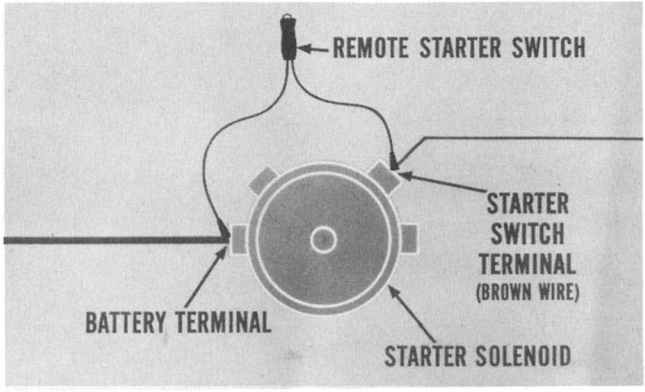


Using the Remote Starter Switch to Set Timing, Test Compression. When setting timing, or testing compression, it's important to use the remote starter switch correctly or you might burn out the neutral safety switch. On Chrysler models, you connect the remote starter switch between the battery terminal of the starter relay and the solenoid terminal. That's the center terminal, the one with the brown wire attached. On De Soto models with a starter relay, con-



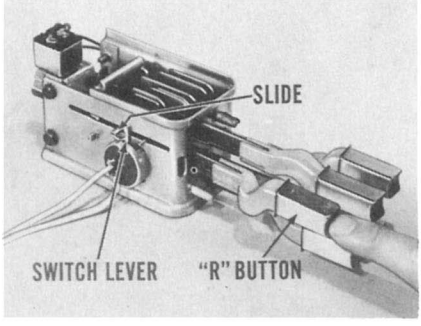
nect between the battery terminal and the ignition (yellow wire) terminal.

On De Soto, Dodge and Plymouth models without the starter relay, connect the remote starter switch between the battery terminal of the solenoid and the starter switch terminal. That's the terminal located toward the rear of the car, with the brown wire attached.



BACK-UP LIGHT SWITCH

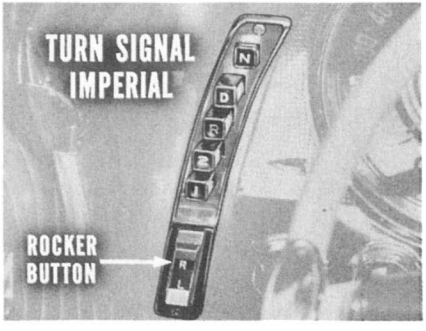
As most of you know, the back-up light switch is mounted on the left side of the push-button housing on all Torque-Flite transmission jobs of 1957 model. When the "R" button is pushed in, a projection from the slide picks up the switch lever, turns it counter-clockwise and closes the circuit. If this switch ever needs replacement, remove the housing and use a long, narrow-blade screwdriver to straighten the four tabs that hold the switch. Remove the switch. Replace it. Bend the four tabs over, and put the housing back.



TURN SIGNAL CIRCUIT— IMPERIAL ONLY

The turn signal circuit used on the Imperial models consists of a manual canceling switch, an automatic canceling switch, a flasher unit, a relay, and the necessary connecting wires and lamps.

The manual canceling switch is of the "rocker button" or "teeter" type, with the letter "R" at the top for a right turn, and the letter "L" at the bottom for a left turn. It is located at the bottom of the row of push buttons for the Torque-Flite transmission. To operate the signal, merely push the "R" or "L" end of the rocker button. If an error has been made, and you wish to turn the signal off, merely press the center of the rocker button and the signal becomes inoperative.

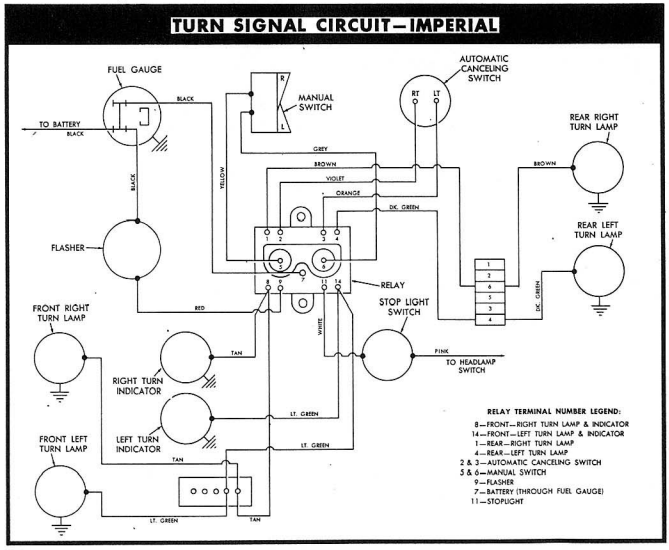


The automatic canceling switch is mounted on the steering column, and automatically cancels the signal when the steering wheel returns to the straight-ahead position.

The flasher unit is mounted on the back of the speedometer, behind the instrument panel.

The relay is mounted at the top of the left cowl side panel. It contains the latching relays which hold the circuits closed until they are broken either by the automatic or manual canceling switches.

Testing The Circuit. The turn signal circuit can be tested with the ordinary test light. The accompanying diagram shows the various circuits which make up the system. Before making tests, turn the ignition switch to the ON position.



Test The Manual Switch. To check the right turn signal, push the manual switch for a right turn and connect the test lamp between the relay No. 5 terminal and ground. If the test light flashes but the right-turn lamps don't flash, it indicates the bulbs or wiring between the

lamps and relay is faulty and should be repaired or replaced. If the test light doesn't flash, test the flasher.

The left turn signal is checked in the same manner except that the test light is connected between the relay No. 6 terminal and ground.

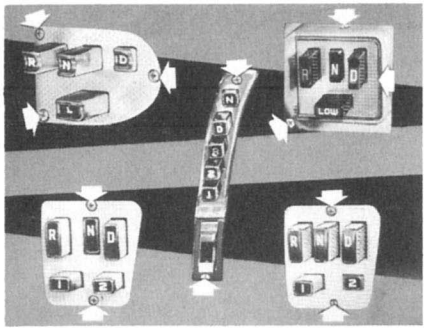
Test The Flasher. Connect the test light between the relay No. 9 terminal and ground. If the test light fails to light it indicates the wiring between the flasher and relay, or the flasher or relay, is faulty and should be replaced.

Test The Relay. Connect the test light between the relay No. 7 terminal and ground. If the test light fails to light it indicates the wiring from the fuel gauge to the relay, or the relay, is faulty and should be replaced.

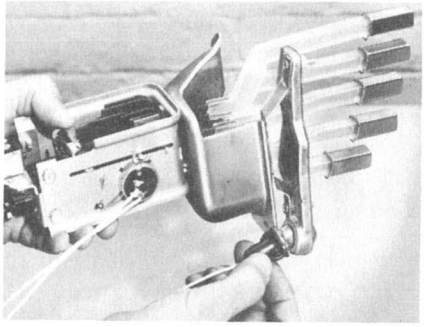
BULB REPLACEMENT

Transmission Push-Button Housing. It may occasionally be necessary to replace the bulb that illuminates the push-button housing on cars with PowerFlite and Torque-Flite transmissions. To do this, remove the crosshead screws from the push-button plate. Lift off the plate and remove two or three push buttons to give yourself plenty of working room.

Reach in with the Bulb Removing Tool (C-3399), remove the bulb, and replace it with a new one. Reinstall the push buttons and the plate. Check operation of the push buttons and light bulb.



You'd replace the bulb in just about the same way on all but the Imperial models. The main difference is the number of screws that attach the plate, and the screw locations.



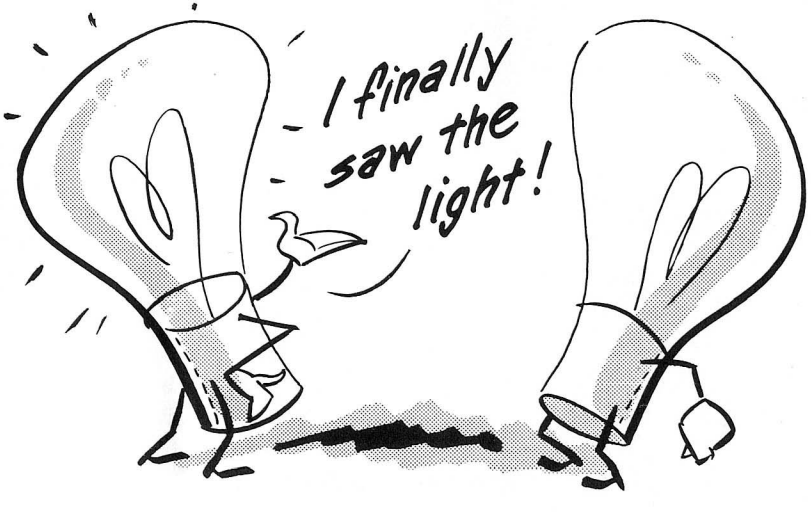
On the Imperial models, the bulb socket snaps into the rear of the housing. So, you'd just reach up behind the housing, pull the socket out and install a new bulb. Then, push the socket back in place.

Plymouth Headlamps. On the new Plymouth headlamps, a large plate, called a bezel, serves as a door and support for the parking lamp. To replace the sealed-beam unit, you remove three screws from the bezel. One screw is below the sealed-beam unit. One's at the top. The third one is inboard of the parking lamp.

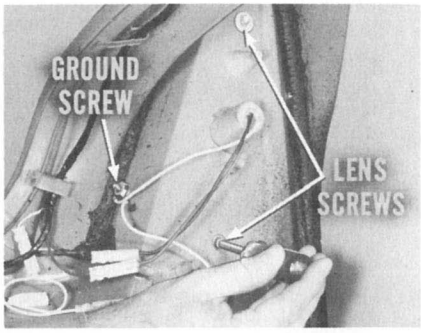
Lift off the bezel and rest it on the front bumper, since the parking lamp socket and wire are still attached. Remove the screws holding the sealed-beam unit. Replace it, adjust the beam, and reinstall the bezel.

To replace the parking lamp bulb, remove the one long and two short screws that hold the lens to the bezel. Replace the bulb and button her up.

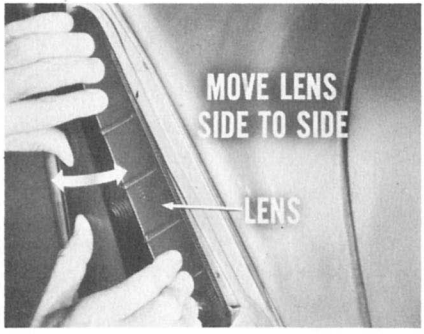
Plymouth Taillamp Bulb. The lenses of the Plymouth taillamp and back-up light are of new design. Both lenses are mounted in a rubber base. This base, in turn, is secured to the fender by built-in tapered rubber studs. If it becomes necessary to remove the back-up light



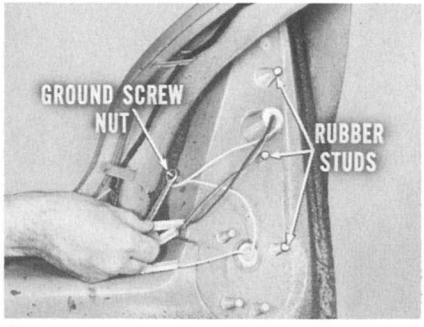
lens, you must remove the taillamp lens first. A flange on the taillamp lens overlaps a flange on the back-up lens. To get at the screws that hold the lens to the fender, work from inside the luggage compartment.



You'll also notice that the lamp sockets are grounded to the fender panel by a separate wire. To replace either the taillamp or back-up light bulbs, remove the two screws. One's at the top, and one's at the bottom of the lamp.



Then, very carefully, move the taillamp lens from side to side to release it from the base flanges. Remove the back-up lens in the same careful manner. Replace the bulbs and reinstall the lens.

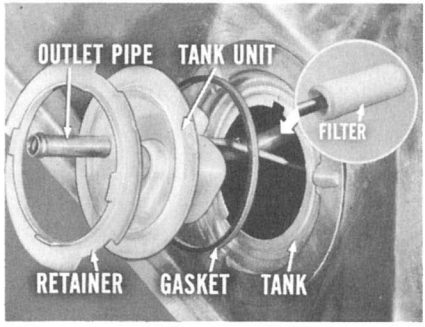


If you ever have to remove the rubber base, first remove the ground screw nut. Disconnect the ground wire and the bulb wires. Then, as you press out the rubber studs, pull the base away from the fender. To reinstall the base, just push the studs through the fender holes until they lock in place in their retaining grooves.

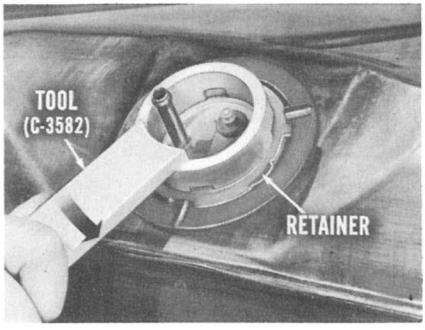
ELECTROMAGNETIC FUEL GAUGE

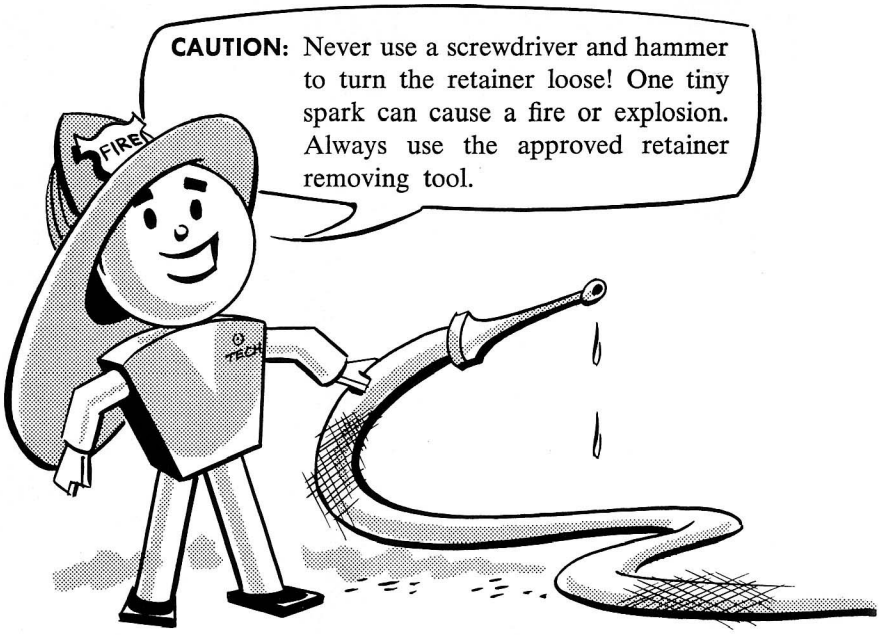
There's a new electromagnetic fuel gauge on '57 cars. It consists of a panel unit and a tank unit connected by a single wire. The new-type terminals are also on the wire. The panel unit has a thin coat of silicon dampening on the shaft pivots. This steadies the pivot action and cuts down on needle wiggle whenever the gasoline surges inside the tank.

On all but the suburban models, the tank unit is at the top, and toward the front of the tank. A retainer plate and rubber gasket secure it in place. The outlet pipe is also a part of the tank unit. On one end of the tank unit is a plastic sleeve that serves as the new fuel filter. Washing action of the gas keeps it clean and prevents it from clogging.



Fuel Gauge Service. If the fuel gauge ever needs attention, you'd go about testing both the tank and panel units as you always have. Removing the tank unit, however, calls for the use of a new Retainer Removing Tool (C-3582) to turn the retainer out first. It gets this job done without removing the tank, and is a lot safer to use.





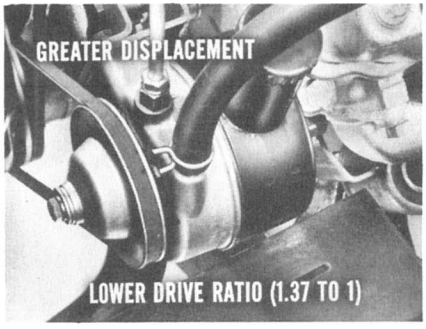
Be sure that the rubber grommet in the floor panel is in place when you complete the fuel gauge circuit. The wire from the panel unit goes through this grommet and is thereby protected from grounds and shorts.

Suburban Models—Gas Tank Unit. The gas gauge tank unit on Suburban models is accessible through an opening in the baffle plate in the left rear quarter panel behind the rear wheel. You can remove the gauge for testing by disconnecting the wire and flexible hose connection. Use the Retainer Tool (C-3582) to remove the gauge retainer.

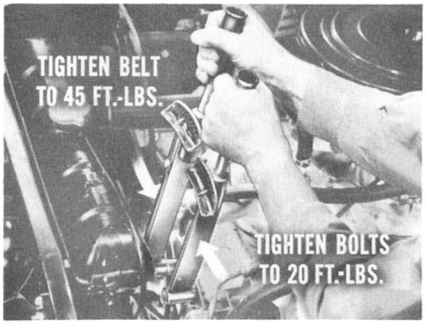
SLEEVE-TYPE POWER STEERING PUMP

You'll notice that there is a new sleeve-type power steering pump used on Plymouth and Chrysler cars with power steering. It is com-

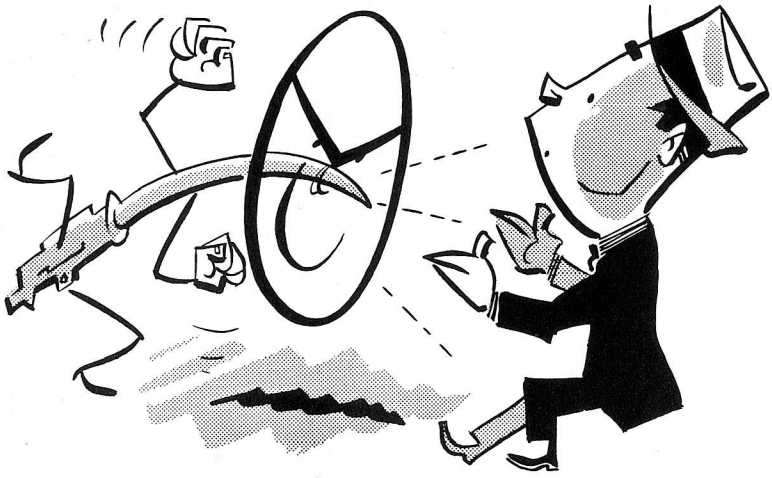
bined with the reservoir and mounted on the left front end of the engine. It is driven by either one or two belts directly from the crankshaft pulley. This new power steering pump has a greater displacement, and puts out high capacity at low or idle speeds. Because of greater displacement, a lower drive ratio of 1.37 to 1 is possible. This low ratio and resulting slower speed contribute to a quieter operating pump.



Servicing the Power Steering Pump. As you'd find on any belt-driven pump, all the advantages of design improvement won't be provided unless that belt is adjusted properly. So, if you find that pump performance isn't what it should be, check belt adjustment before you look at anything else. To adjust the pump belt, loosen the bracket bolts holding the pump to the engine. There's a square hole in the bracket on some models which permits adjusting the belt by using a torque wrench instead of measuring belt deflection. So, engage the torque wrench in the square hole in the bracket, and tighten the belt. On Plymouth cars, tighten the belt to forty-five foot-pounds torque. When installing a new belt, tighten it to seventy-five foot-pounds. After a new belt has run for a few minutes it will stretch, and the tension will drop to about forty-five foot-pounds. On Chrysler cars which use two belts on the power steering pump, the belt tension is ninety foot-pounds. When installing new belts, set the tension at ninety foot-pounds; run the engine a few minutes, stop it and recheck. If the tension has reduced, due to the belts



having stretched, reset the tension to ninety foot-pounds. Hold that tension with the wrench, and—using another torque wrench—tighten the bracket mounting bolts to about 20 foot-pounds torque.

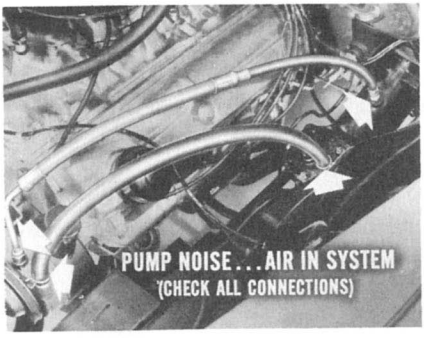


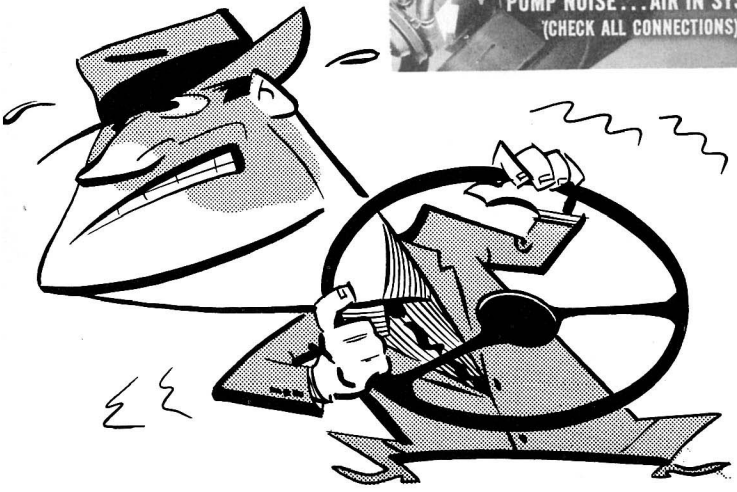
Pump Noise Condition. Now, if the power steering pump ever sounds off, it might be due to too low an oil level in the reservoir. So, see that the oil is right up to the level mark (and no higher) on the filler neck after the pump has been in operation for a few minutes.

NOTE: Always have the engine running before you turn the steering wheel. If you don't, oil will be forced out of the reservoir filler tube. An oil level too high, by the way, will also cause oil to be forced out through the tube. So, never overfill the unit.

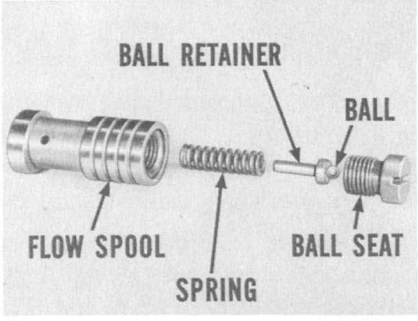
Pump noise can also be a sign that there's air in the steering system. To correct a condition like this, check all connections to be

sure they're tight. You may have to bleed the return hose until you're sure there is no longer any air in it. Another possible source of noise is contact between pressure and return hoses and the sheet metal. This will transmit a vibrating noise inside the car. Two other causes of pump noise are a pulley that's loose on the shaft, and water in the fluid.





Hard, Jerky Steering at End of Turn. Occasionally, an owner may report hard or jerky steering at the end of a full left or right turn. A loose belt can cause this condition. So can dirt in the pressure relief valve. Dirt in the relief valve will also cause intermittent



lack of assist. To clean the pressure relief valve, you have to drain the pump and reservoir. Remove a ¼" cap screw and remove the reservoir. Then remove the 1⅛" hex nut that holds the flow valve and spring in the pump body. Remove the flow valve spool. The pressure relief valve is inside the flow valve spool. Remove the screw in the end of the flow valve spool.

This screw is the pressure relief valve ball seat. Also, remove the ball, ball retainer and spring.

Clean all parts. Inspect the ball seat for nicks and for dirt in the relief orifice. In addition, check the ball for nicks and grooves. Replace any damaged parts.

If pump pressure is too high, place a 1/32" washer between the ball seat and flow spool when you assemble the pressure valve into the flow spool. If pressure is too low, install the 1/32" washer between the spring and ball retainer.

The combination pressure relief and flow valve should limit pressure to 900 psi and a maximum flow of two gallons per minute at 3000 r.p.m.

Other Possible Pump Conditions. If the *pump doesn't prime,* there might be a weakened or broken plunger spring. When compressed to a height of 61/64", the spring should exert a force of 29.7 to 36.3 lbs.

If the pump operates at *reduced or no flow,* the cap screws on either end of the pump might be loose. These screws should be torqued 20 to 25 foot-pounds. Besides that possibility, the relief valve spring may be broken or weak. When compressed to a height of 35/64", this spring should exert a force of 12.5 to 14 lbs.

Check for looseness of the flow valve spring retainer. This fitting should be torqued 15 to 20 foot-pounds. In addition, see if the flow valve spring has been weakened or broken. When compressed to a height of 1½", this spring should exert a force of 11.25 to 13.75 lbs.

Low shut-off, or relief pressure can be caused also by loose cap screws on either end of the pump. Tighten these screws 20 to 25 foot-pounds.

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RECORD YOUR ANSWERS TO THESE QUESTIONS ON QUESTIONNAIRE NO. 109

New wiring on the '57 models is made of smaller gauge wire than last year. RIGHT **1** WRONG

The new loop-type ammeter is used on all '57 models except Plymouth. RIGHT **2** WRONG

The direction in which the wire from the generator regulator passes through the loop of the ammeter has no effect on the direction of movement of the ammeter needle. RIGHT **3** WRONG

If the "N" button doesn't start a Chrysler or Dodge with Torque-Flite, check the circuit with a test light, starting at the vacuum lockout switch. RIGHT **4** WRONG

If the test lamp doesn't light when checking the neutral safety switch, check the cable adjustment *before* you replace the switch. RIGHT **5** WRONG

Incorrect use of the remote starter switch when setting timing or testing compression will burn out the neutral safety switch. RIGHT **6** WRONG

Because of the rubber base, '57 Plymouth taillamps and back-up lights have a separate ground wire to the fender panel. RIGHT **7** WRONG

Full benefit from the new power steering pump does not depend on proper belt adjustment. RIGHT **8** WRONG

Pump noise can be caused by air in the steering system, a pulley that's loose on the shaft, or water in the fluid. RIGHT **9** WRONG

Hard or jerky steering at the end of a full left or right turn can be caused by a loose power steering pump belt or dirt in the pressure relief valve. RIGHT **10** WRONG

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