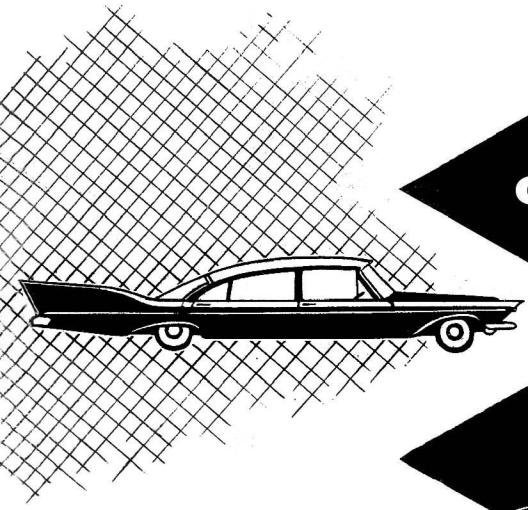
NEW FEATURES OF THE 1957 CARS

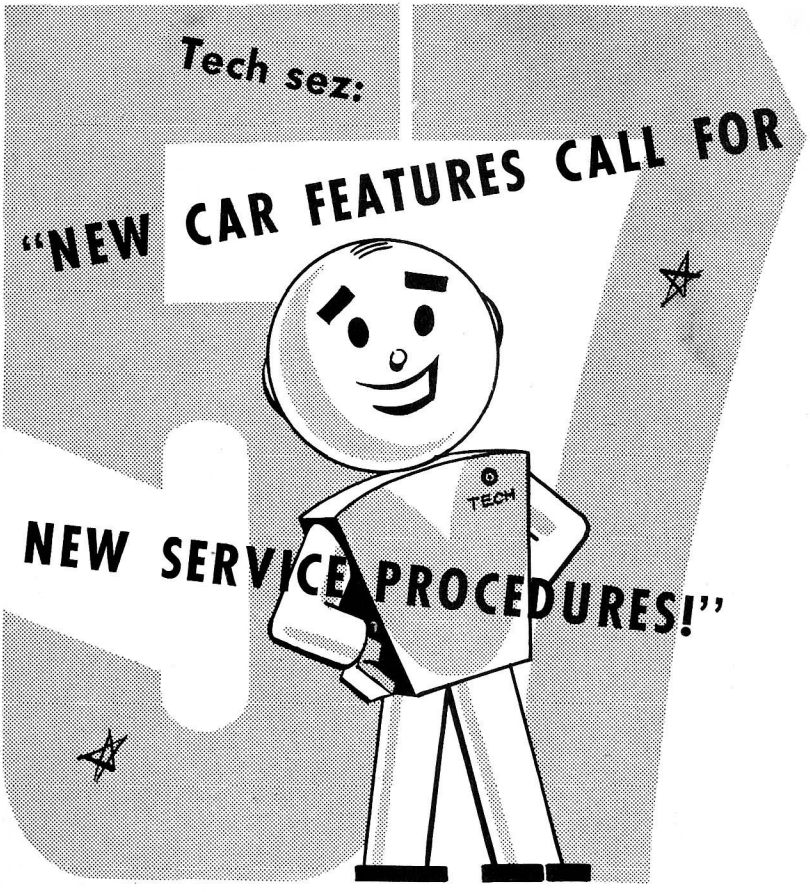
SERVICE REFERENCE BOOK NO. 107



Prepared by

CHRYSLER CORPORATION

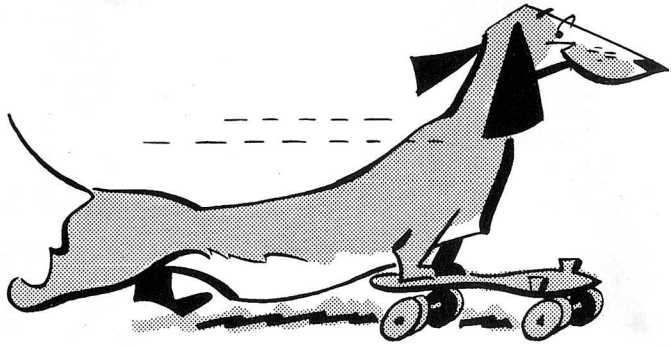
PLYMOUTH — DODGE — DE SOTO AND CHRYSLER DIVISIONS



Time to get ready for the all-new cars of 1957! And talk about *new* . . . our cars are different from bumper-to-bumper, top-to-bottom, side-to-side! They're really something to be proud of, and the engineering improvements sure give us a break in service.

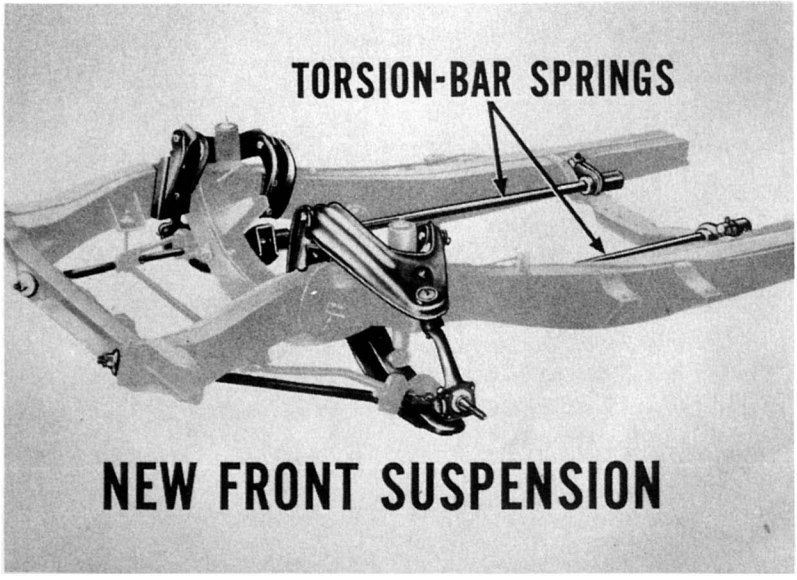
Naturally, we can't talk about *all* that's new. But we *can* cover the new front suspension, Torque-Flite improvements, some new engine features, the new heater and air-conditioning system, and headlamp arrangement. And that's what this reference book is all about.

Here's where to find this important service information

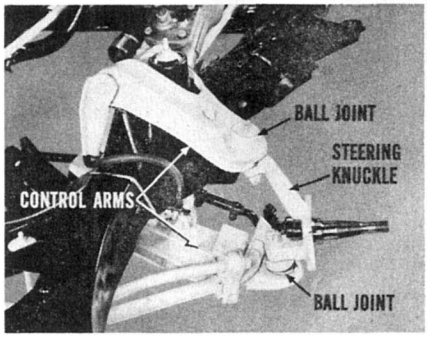


NEW FRONT SUSPENSION SYSTEM

All 1957 models will use a brand-new suspension system. One of its big features is the use of torsion-bar springs instead of coil springs.

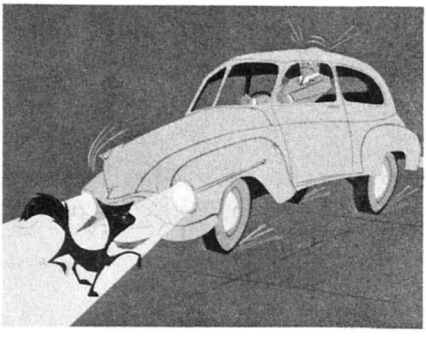


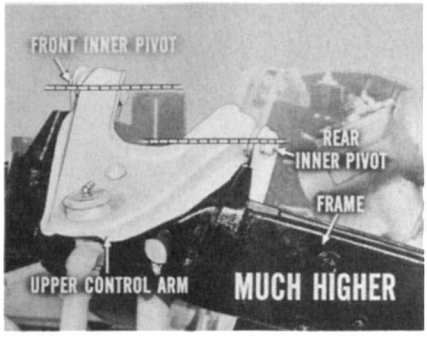
In addition, ball joints are used in attaching the steering knuckle to the upper and lower control arms. This does away with kingpins.



Greater Stability is Provided. New-car owners will enjoy many advantages offered by the new front suspension. There's greater stability, for one. Also, longer parts life, easier handling—and more.

On the subject of added stability, remember how cars used to *dip down* during a *hard brake application?* Well, not any more! Our new upper control arm mounting prevents that annoying brake dip.

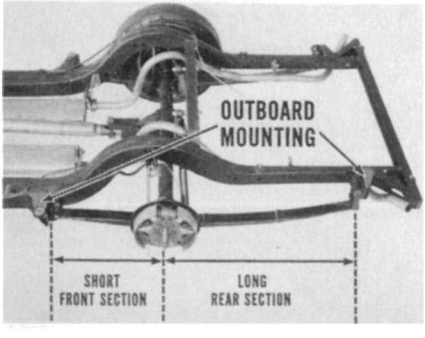




The front inner pivot of each upper control arm attaches to the frame much higher than the rear inner pivot. So, when stopping, forces in the upper control arm, resulting from the braking action, work against the normal tendency of the car to dip. You get a far more *level* stop.

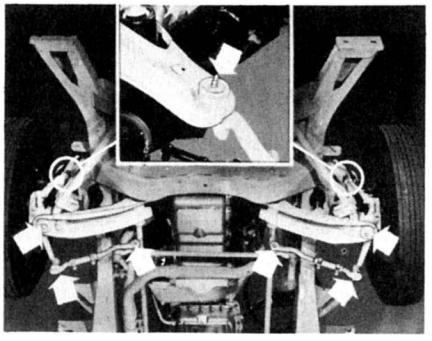
There's a terrific improvement in "cornering," too. You can drive more safely on curves, with very little sidesway or roll. Even on sharp turns you get a smooth, level ride.

Better cornering, as you may know, is a result of a lower center of gravity, plus the new front and rear suspension. Rear springs are mounted outboard of the frame, and the axle housing is mounted forward of the center of the spring. The rear springs are designed with some of the leaves extending more to the front side of the axle housing than to the rear, which results in less "wrap-up" on a hard acceleration. The long, more flexible rear section of the rear spring retains the "boulevard ride" characteristics.



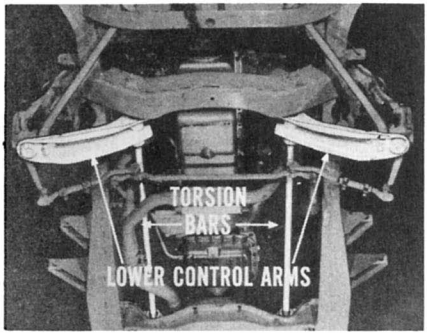
Besides anti-brake-dip and better cornering, there's greater stability at high speeds and on rough roads. Much of this improved stability comes from the new, lower center of gravity, the new rear spring suspension, and the stabilizing effect of the high fins on the rear fenders.

Servicing is Easier. Good news for all technicians is that the new suspension is easier to take care of. Lubrication, for instance is simplified. There are only eight fittings, about one-third the number ordinarily used. There's one in each steering knuckle ball joint, and one in each of the four tie rod ball studs.

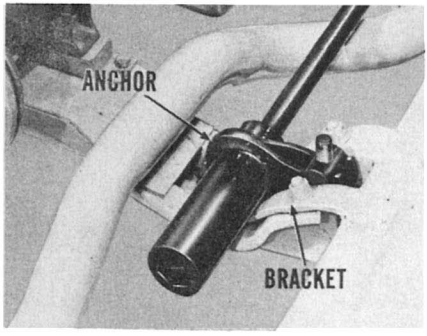


No lubrication's needed at the upper and lower control arm pivots. These points are supported in rubber-insulated bushings.

TORSION-BAR SPRINGS: CONSTRUCTION AND OPERATION



Construction. Some detail on how the torsion-bar springs are constructed, and how they operate will be helpful. Both torsion bars, you'll notice, are parallel-mounted inside the frame side rails. At the front, they're assembled in the lower control arm at the inner pivot.



The rear end of each torsion bar indexes into an anchor supported in a frame bracket. Each bar is made of special steel with high resiliency and stress qualities.

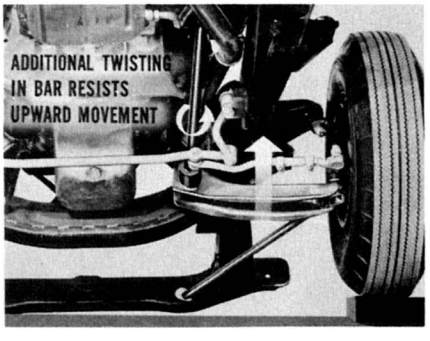
When you look at the torsion bars, they appear to be made the same at both ends. However, they are pre-set with a torsional twist when manufactured, and are identified for right and left installation with the letters "R" and "L" in the front (control arm) end of each bar. An arrow also appears, but that's for manufacturing convenience only. Pay no attention to the arrow.

The part number of each bar is stamped at the rear (anchor) end. Since different models call for different torsion bars, be sure to check the part number of each bar against the parts list for the car you're working on.

Operation. How the torsion-bar spring works is easy to understand. If you held a piece of ordinary garden hose firmly in one hand, and twisted the opposite end, that's basically how the torsion-bar spring operates.

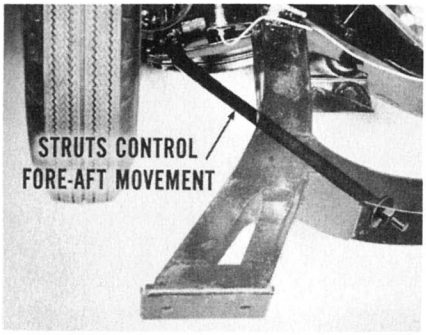
The end held firmly is the anchor. The hose is the torsion-bar spring. Your twisting hand would be the lower control arm.

On all of our new cars, both torsion-bar springs are preloaded with the car weight on the springs. So, when one front wheel rolls over a high spot, the outer end of the lower control arm moves upward, causing additional twisting of the torsion bar. The bar quickly sets up a resistance to this additional twisting, thus providing the spring action necessary.



A bar, called a strut, is connected between each lower control arm and the frame front crossmember. The front of each strut is mounted in rubber, and the rear end is rigidly mounted to the outer end of the lower control arm.

The job of these struts is to control any fore-and-aft movement of the lower control arms. They hold the lower control arms in correct alignment, and yet allow unrestricted up-and-down movement of the front wheels. As a result, the flexible front mounting lets the struts move up and down with the control arms, and still lets them pivot where they're mounted in the frame.

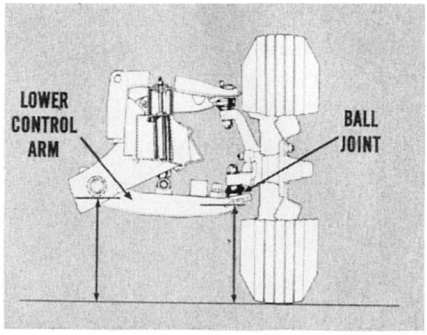


CAUTION: Never lubricate any of the rubber pivot points on the new front suspension. Using powder, brake fluid, graphite —or *any* lubricant, will destroy the gripping action of the rubber bushings. This will cause them to fail and squeak.

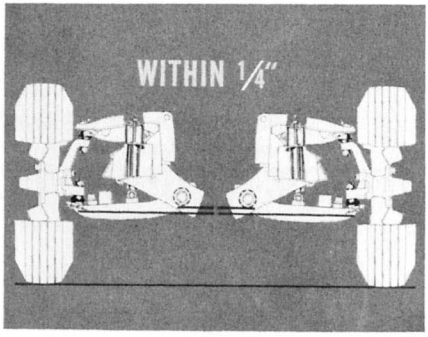
MAINTENANCE

Leveling Front of Car. When you go about checking the level of the front end if it seems necessary, follow the same methods you've used before. Put the car on a level floor, inflate the tires properly, and have *only the car weight* on the springs—nothing inside the car, or inside the luggage compartment.

On one side, measure from the lowest point of the lower control arm ball joint . . . to the floor. Also, measure from the underside of the lower control arm bushing housing (between the flanges of the arm) to the floor. Find the difference in these two measurements.



Take the same measurements on the *other* side, and find the difference. Then, compare the two figures. They should be within ¼″ of each other.

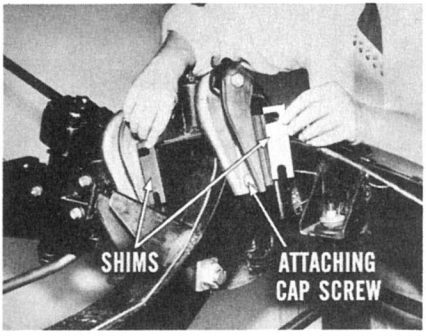


To level up a car that needs it, remember, you just turn the adjusting bolt at the torsion-bar spring rear anchor to increase or decrease the tension in the bar, bringing the two sides within one-quarter inch of each other.

Keep in mind, however, that any leveling adjustment you make will also affect wheel alignment and headlamp alignment. So, be sure to check these alignments and correct them if necessary.

NOTE: If you have any difficulty in properly leveling the front end, perhaps the "R" and "L" bars have been reversed. If so, be sure to get these torsion bars reinstalled correctly.

Caster and Camber Adjustment. With this new suspension, of course, adjusting caster and camber call for new procedures. Adjustment is made by using 1/16" and 1/32" shims. You insert these shims between the upper control arm support brackets and the frame. A 1/16" shim will change caster about ½-degree, and will change camber about 5/16-degree. Camber specifications are the same for all '57 models. Caster settings vary, depending on whether the car has manual or power steering.



So, refer to the table below for front end specifications.

MAKE OF CAR	CASTER		CAMBER		TOE-IN	STEERING AXIS INCLINATION AT 0° CAMBER
	WITH MANUAL STEERING	WITH POWER STEERING	RIGHT WHEEL	LEFT WHEEL		
Plymouth	−¾° ±¾°	+¾° ±¾°	0° ±¼° (0° preferred)	+¼° ±¼° (+⅜° preferred)	3/32" to 5/32" (⅛" preferred)	6½°
Dodge	−¾° ±¾°	+¾° ±¾°	0° ±¼° (0° preferred)	+¼° ±¼° (+⅜° preferred)	3/32" to 5/32" (⅛" preferred)	6½°
De Soto	−¾° ±¾°	+¾° ±¾°	0° ±¼° (0° preferred)	+¼° ±¼° (+⅜° preferred)	3/32" to 5/32" (⅛" preferred)	6½°
Chrysler	−¾° ±¾°	+¾° ±¾°	0° ±¼° (0° preferred)	+¼° ±¼° (+⅜° preferred)	3/32" to 5/32" (⅛" preferred)	6½°

NOTE: When adjusting caster and camber, the car must be empty—no luggage or load—just the car weight on the springs. Grasp the front bumper in the center and jounce the car up and down several times to get springs and shock absorbers in normal position before taking your gauge readings.

Procedure For Installing Shims. Jack up the side of the car on which you plan to make an adjustment. Place the jack as close as possible to the front wheel. This removes the load from the upper control arm and facilitates adding or removing shims.

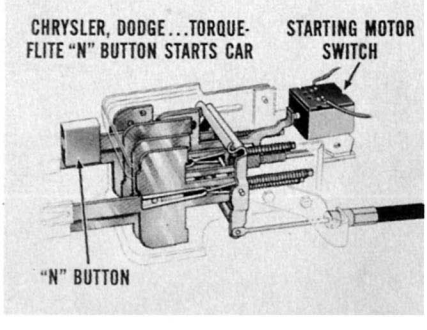
Once the car is raised, loosen the upper control arm support bracket bolts. Add or remove shims at the front or rear bracket as needed, and retighten bolts. Remove the jack, and jounce the front end of the car before rechecking the new alignment.

When you adjust caster you also affect camber slightly, so you'll have to check it. You use the same shims. But remember, when you adjust camber *only,* change shims *equally* at *both* brackets.

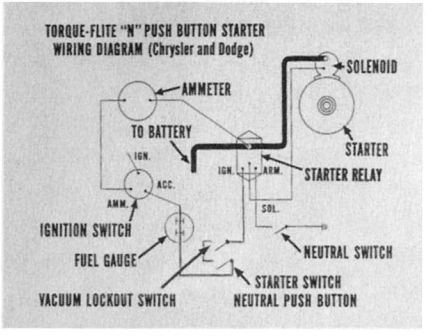
Adjusting Toe-In. You adjust toe-in the same as you always have. And on all models, with or without power steering, the toe-in specification is $\frac{3}{32}$″ to $\frac{5}{32}$″, with $\frac{1}{8}$″ preferred.

TORQUE-FLITE TRANSMISSION CHANGES

Starter Switch. Torque-Flite transmission is now available on all cars. This is the 3-speed automatic transmission, you'll recall. One important thing to know about it is how to start Chrysler and Dodge Torque-Flite cars. On these models, the starting switch is connected to the "N" button. You push the "N" button in about $\frac{1}{8}$″ beyond the normal travel to start the engine.



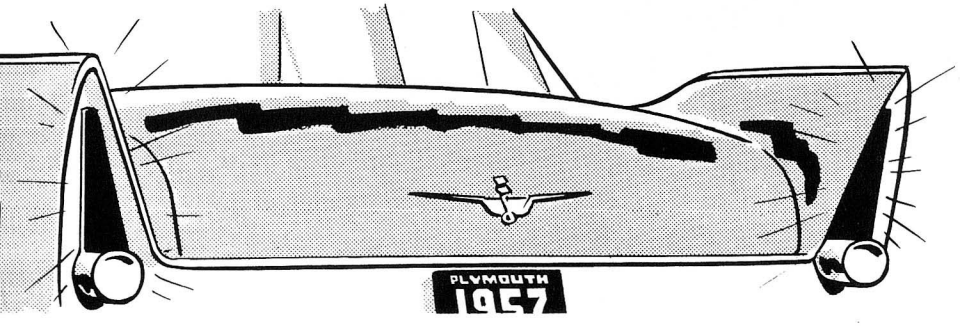
It not only simplifies starting, but also serves as a safety feature. It insures that the transmission is always in neutral before the engine will start.



Now, even if you shift from Drive to Neutral while the engine's running, there's no danger of engaging the starting switch. A vacuum safety lockout switch on the intake manifold breaks the starting circuit when the engine's running.

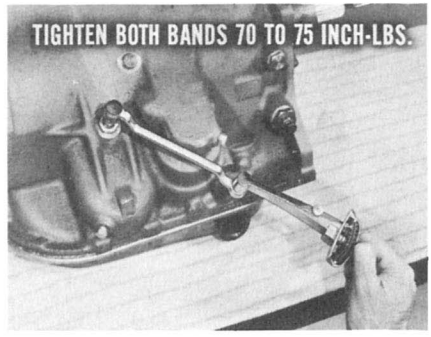
On Plymouth and De Soto models, with or without Torque-Flite, the engine will be started by turning the ignition key as before.

Speaking of transmissions, it's well to remember that the back-up light switches are located in two different places. On cars equipped with PowerFlite, the switch is located in the right rear corner of the transmission case. This switch is operated by reverse servo pressure.



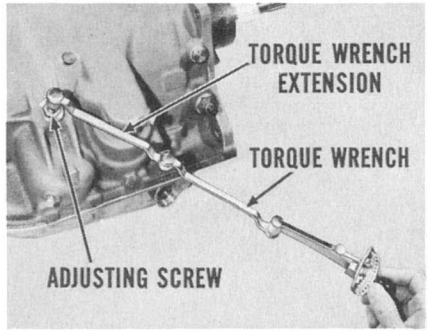
On Torque-Flite equipped cars, the back-up switch is mounted on the left side of the push-button housing. In this location the switch is actuated by the "R" button.

Adjusting kickdown and low-and-reverse bands. Adjusting specifications for the kickdown band and for the low-and-reverse band on Dodge and Plymouth are different from Chrysler and De Soto. When making these band adjustments, first tighten both bands from *70 to 75 inch-pounds.*

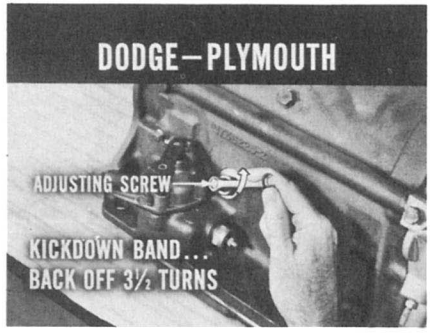


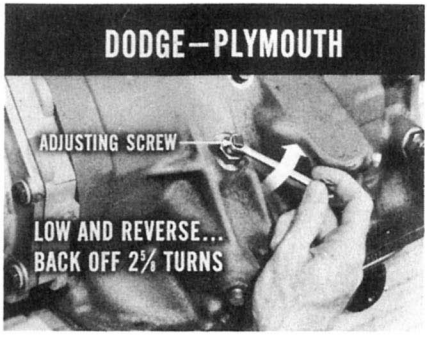
NOTE: When adjusting bands with the transmission *in the car,* a Torque Wrench Extension (C-3583) is required. This extension is necessary to provide clearance for the wrench at the front suspension torsion-bar spring.

Because the extension increases the length of the wrench, the torque reading on the adjusting screw, in this case, is reduced from 70 to 75 inch-pounds to 47 to 50 inch-pounds.



Then, on *Dodge and Plymouth* models, back off the kickdown band adjusting screw *3½ turns.*

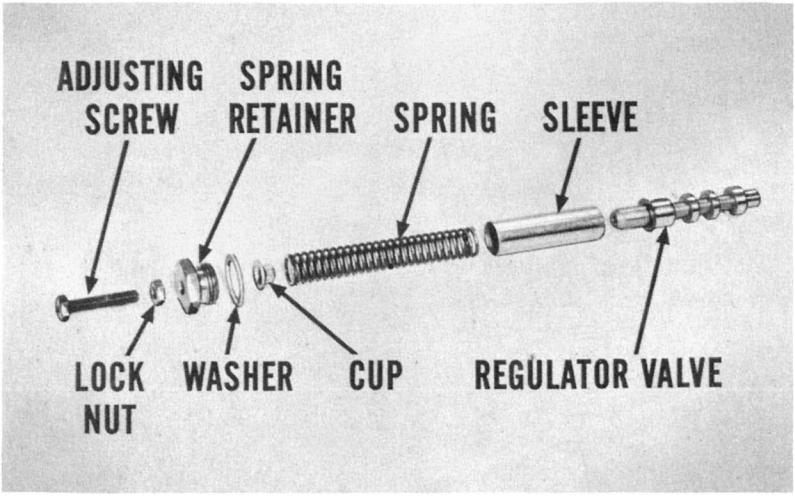




When you adjust the low-and-reverse band on Dodge and Plymouth models, back off the adjusting screw *2⅝ turns.*

Chrysler and De Soto specifications for adjusting the kickdown band and the low-and-reverse band are the same as they were for 1956 models—back the adjusting screws out two turns.

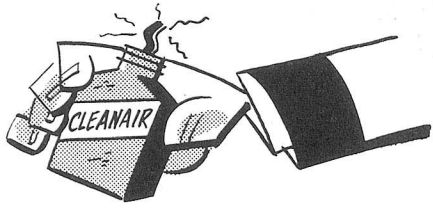
Line Pressure Can be Adjusted. You can now adjust line pressure in the Torque-Flite transmission. The regulator valve now has an adjusting screw and lock nut in the spring retainer. That means the spring force against the regulator valve can be adjusted to increase or decrease line pressure.



You just turn the adjusting screw in or out of the retainer. This increases or decreases the spring force against the valve —and thereby increases or decreases line pressure. You'll find this far easier than before when it was necessary to remove the regulator valve, and inspect both it and the spring whenever line pressure was off.

NOTE: This adjustment only covers a 15-lb. pressure variation from the 90-lb. pressure required. More than 15 lbs. variation, therefore, means you'll have to look for and correct other causes.

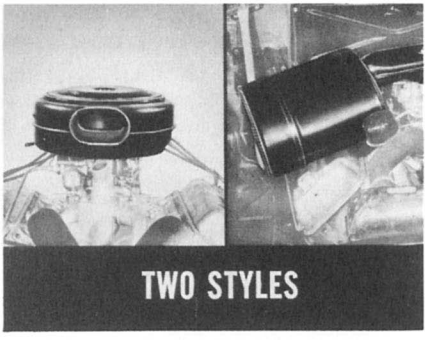
ENGINE FEATURES



AIR CLEANER

One of the many new engine features is a brand-new carburetor air cleaner. It uses a dry, micronic fiber element that does not need oil to filter out the incoming air. This fiber element is designed for longer life, and is engineered especially for the 1957 engines, and tests show that it improves performance. Service on it is very simple.

Every 5,000 miles, you remove the element for cleaning. Tap it lightly on a flat surface to knock off dust and dirt. Every 15,000 miles, replace the element with the approved type. You'd clean and replace this element more often on cars operating in extremely dusty areas.



There are two styles of air cleaners, by the way. One is flat and mounts on top of the carburetor. The other is cylindrical and mounts off to one side. Both cleaners do the same job, and are serviced the same.

BELT ADJUSTMENTS

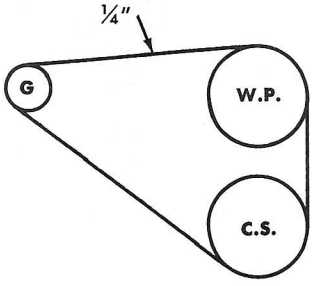
There are new specifications for adjusting belts across water pump, generator, power steering pump, and air-conditioning compressor pulleys. To adjust belt tension properly, use a straightedge across the belt between the pulleys.

The generator and the power steering pump are pivot-mounted, and can be moved to adjust belt tension. Some models use an idler pulley between the crankshaft and water pump pulleys, and the idler pulley mounting is adjustable to control belt tension.

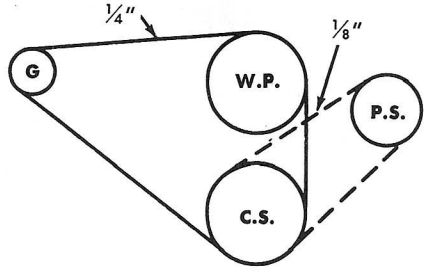
The diagrams which follow indicate the point at which belt deflection is measured, and the amount of deflection on belts that have been in service for at least one-half hour, for the various models and belt arrangements.

BELT ADJUSTMENTS
PLYMOUTH, DODGE

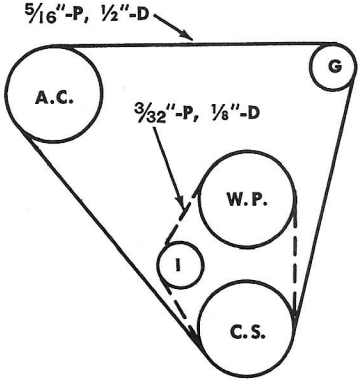
V-8, STANDARD EQUIPMENT



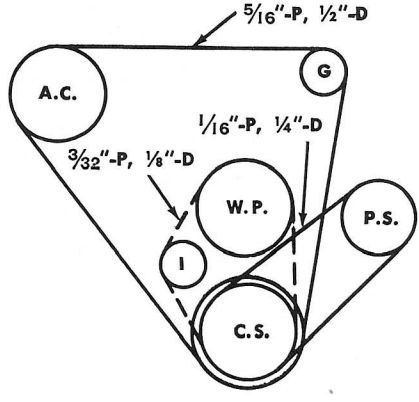
V-8, WITH POWER STEERING



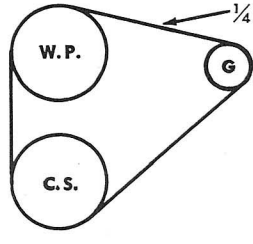
V-8, WITH AIR CONDITIONING



V-8, WITH AIR CONDITIONING AND POWER STEERING



PLYMOUTH AND DODGE 6-CYLINDER STANDARD EQUIPMENT

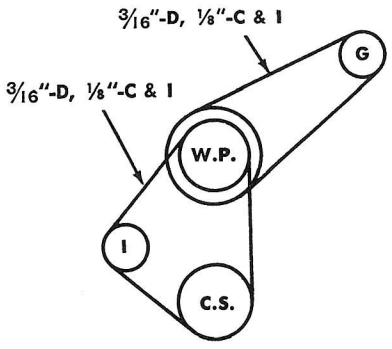


NOTE: P=PLYMOUTH
D=DODGE

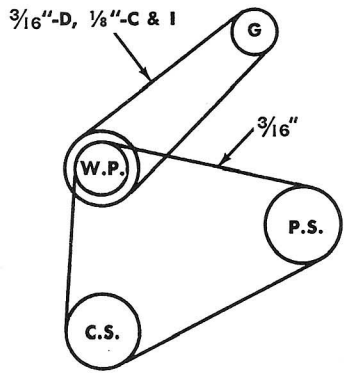
BELT ADJUSTMENTS

DE SOTO, CHRYSLER AND IMPERIAL

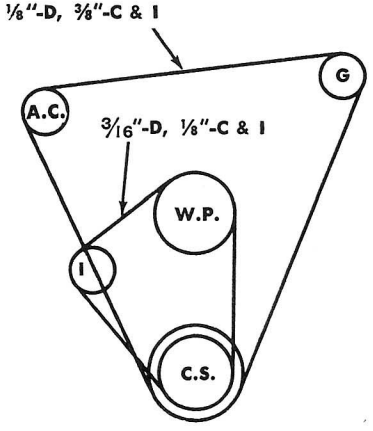
STANDARD EQUIPMENT



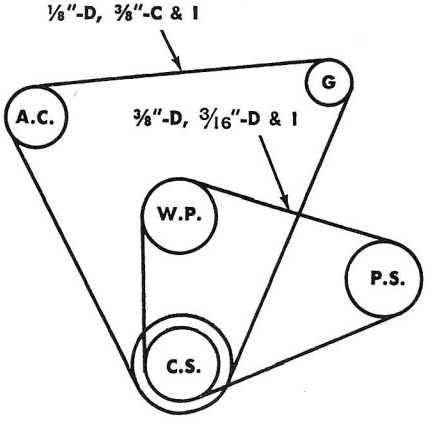
WITH POWER STEERING



WITH AIR CONDITIONING



WITH AIR CONDITIONING AND POWER STEERING



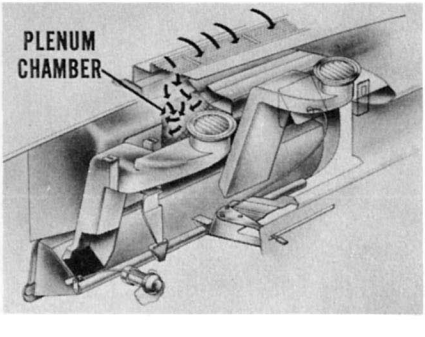
NOTE: D=DE SOTO
C & I=CHRYSLER AND IMPERIAL

NEW HEATING AND AIR-CONDITIONING SYSTEM

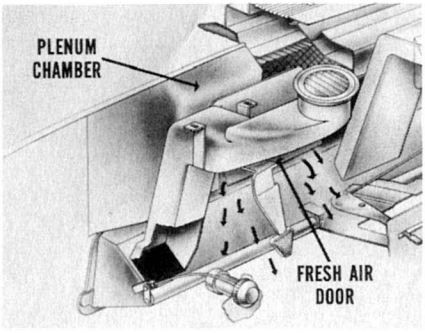
New cars will feature either a heating system alone, or a combined heating and air-conditioning system. Both compact, improved-design units are mounted in the dash panel.

HEATING SYSTEM

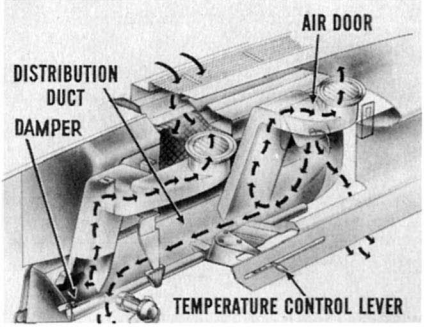
For the heating system, fresh air from outside enters the intake grille located in the cowl at the base of the windshield. It then passes into an air chamber on the passenger side of the dash panel. This chamber is called a "plenum" chamber. "Plenum" means air at pressure greater than atmospheric pressure, a result of the ram-effect of the incoming air.



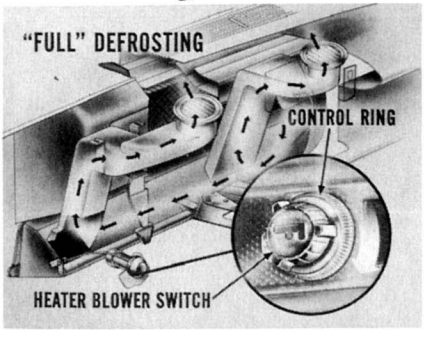
The heater core, mounted on the engine side of the plenum chamber, has engine coolant circulating through it, just as in the former heating system. There's a fresh-air door on the passenger side of the plenum chamber. When this door is open, fresh air enters the passenger compartment directly, for maximum cooling and ventilation.



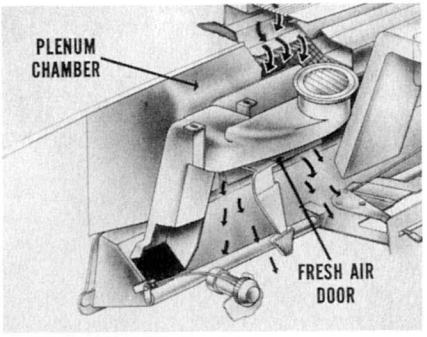
An air door, between the blower and the distribution duct, is operated by the temperature control lever. When opened, air from the plenum chamber is blown into the distribution duct by the blower. A long damper in the distribution duct directs air to either the floor outlets or to the defroster outlets on top of the instrument panel.



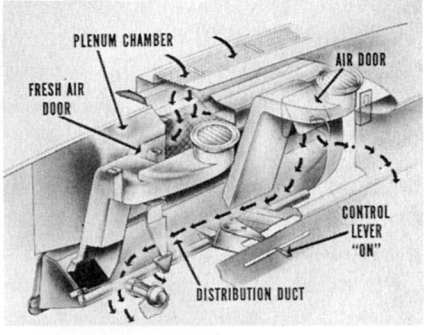
A control ring, around the heater fan switch, operates the distribution damper. One full turn—clockwise – sends all heated air toward the windshield for full defrosting. When turned only part way, the heated air is divided between the defroster and the floor outlets. So, the owner can regulate the amount of defrosting and heating to suit any condition.



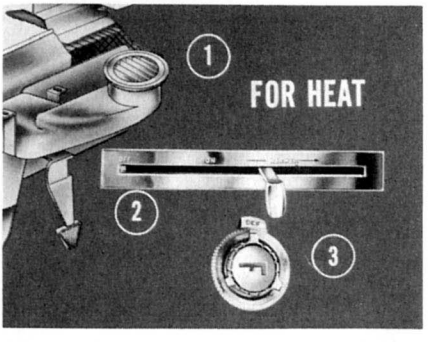
Fresh, unheated air can be directed inside the car two ways. First, opening the fresh air door lets air enter the intake grille through the plenum chamber, and through the opened door to the interior.



Second, you can close the fresh-air door and move the temperature control lever to its "ON" position. This opens the air door between the blower and distribution duct and lets air in the plenum chamber circulate through the distribution duct and inside the car.

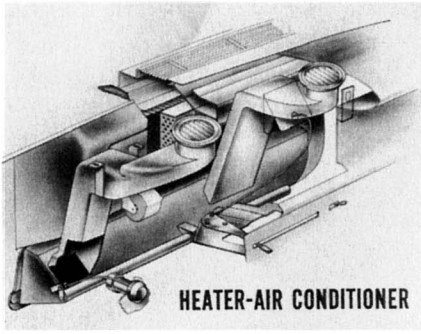


If it's heat you want, close the fresh-air door. Move the temperature lever toward the "WARMER" setting. Turn the blower control "ON" to increase the flow of warm air.



If you want defrosting, turn the ring around the fan knob for the amount of defrosting needed—partial or full.

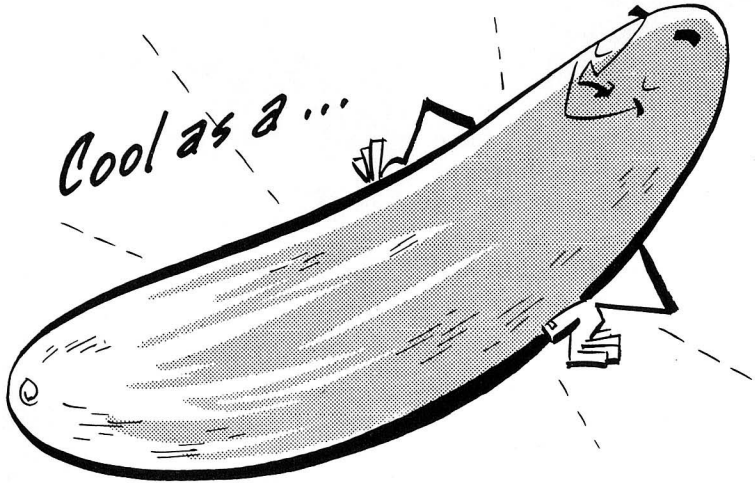
COMBINED HEATING—AIR-CONDITIONING SYSTEM


HEATER-AIR CONDITIONER

In the combination unit, the hot water heater and air-conditioning systems are combined and mounted in the dash panel. The gasoline heater cannot be used with the air-conditioning system.

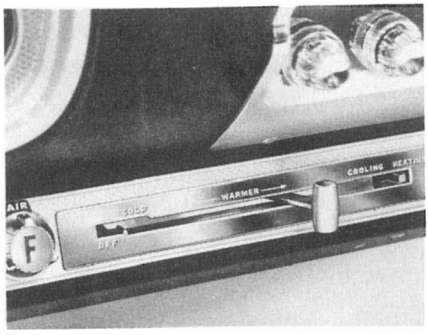
Air circulation in this combination is similar to the heater system alone, except that air is also routed around the evaporator coils of the air conditioner. Temperature control is provided by a reheating process.

For summer operation, the air can be dehumidified and cooled as it passes around the evaporator coils, and then reheated by the heater coils to a temperature the driver selects. Even when minimum cooling is wanted, dehumidification can be obtained.



CONTROLS

In the driver's compartment, the controls consist of a combination switch with an outer ring, a toggle switch, and a main control lever. These controls are partially power-actuated.



Combination Switch. The inner part of this switch is marked "FAN" and controls the speed of the blower motor. It has three positions: "OFF", "LOW", and "HIGH". At high speed the blower delivers about 220 cubic feet of air per minute.

An outer ring, marked "AIR", controls the position of the distribution duct damper. It's used to divide air flow to defroster outlets on the instrument panel and outlet slots in the distribution duct to the floor. Turning the ring *clockwise,* directs air to the instrument panel; *counterclockwise,* directs air to the floor.

Toggle Switch. When this switch is in the "COOLING" position, it energizes the compressor clutch circuit and the water temperature control valve resistance unit. In the "HEATING" position, this toggle switch de-energizes these circuits.

Main Control Lever. This lever, by means of a cable, operates the water temperature valve. It also electrically actuates the fresh-air and recirculating doors. In the "OFF" position, it closes the fresh-air door and opens the recirculating damper. This is done by energizing a solenoid valve which lets engine oil pressure act on a power piston.

A micro-switch also opens the clutch and water coil circuits when the main control lever is in the "OFF" position.

OPERATION

Toggle Switch in "COOLING" position. If the control lever is on "COLD", and the toggle switch is in the "COOLING" position, the compressor clutch and water valve heating element are energized. The water temperature control valve is closed, so there's no hot water in the heater core. The fresh-air door is closed, and the recirculating door is open. So 80% of the air is recirculated. The other 20% is fresh air, and the owner enjoys maximum cooling.

If the control lever is moved from "COLD" to the next position (No. 3, but not marked on the control panel), the solenoid valve is de-energized. This opens the fresh-air door and closes the recirculating door, so that all fresh-air cooling is obtained. Control lever movement picks up the cable that controls the water temperature control valve and gets ready to open it. There still is no hot water in the heater core.

If the control lever is then moved from the unmarked No. 3 position through the "WARMER" range and to position No. 4, the cable opens the water temperature control valve. This lets hot water enter the heater core. At the warmest setting, the water valve causes the heater core to reheat the cooled air to about 75° F.

Toggle Switch in "HEATING" Position. With this switch on "HEATING", move the control lever from "OFF" to "COLD" (No. 2 position). Then the solenoid valve is de-energized. This closes the recirculating door and opens the fresh-air door. The water temperature valve remains closed and there is no hot water in the heater core. Strictly fresh-air ventilation is obtained and is divided up as the owner desires through the defroster grilles and distribution duct openings.

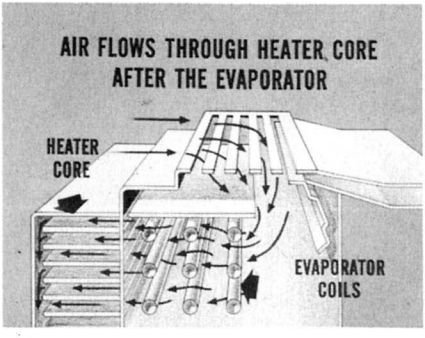
As you move the control lever from "COLD" to the unmarked No. 3 position, it picks up the cable controlling the water temperature control valve and gets ready to open the valve. No hot water is in the heater core and strictly fresh-air ventilation is taking place.

Finally, when you move the control lever from No. 3 through "WARMER" and to the No. 4 position, the cable opens the water temperature control valve. When the control lever's on the *warmest* point, the water valve lets the temperature of discharge air reach about 130° F.

When the engine stops, the recirculating door will always close and the fresh-air door will always open. This puts the system into "safe" position for car washing, or parking during a rainstorm when moisture might try to work inside the car.

Maintenance Points to Remember. A car equipped with air-conditioning has a 180° thermostat. That means you must have permanent type antifreeze in the cooling system *all year!* Even in the summertime there must be enough antifreeze to protect the cooling system down to 20° F.

The reason for this antifreeze protection is that the air flows through the heater core *after* it has passed around the evaporator coils. This, of course, means the air might become cold enough to freeze the coolant inside the heater core. That's why year-around antifreeze protection is a must.



Naturally, you'll have to protect the engine coolant down to even a lower temperature, depending on how cold it's expected to get during the winter.

NEW HEADLAMPS FOR '57

Most models will use the two, conventional sealed-beam headlamps. But some will use *four* sealed-beam units. Cars equipped with two headlamps will have 7″-diameter sealed-beam units. These lamps have upper and lower beams and you'll adjust them in the same way you've always adjusted headlamps.

On cars with four headlamps, however, the sealed-beam units are a smaller 5¾″ diameter. The inboard lamps have only single filaments and are identified by an "I" molded in the top of the lens. These inboard lamps work on only the upper beam.

Outboard lamps have two filaments and are identified by a numeral "2" molded at the top of the lens. These lamps work on both upper and lower beams.

When these lamps work on the upper, or highway beam, all four lamps burn. When the switch is changed to the lower, or passing beam, only the outboard lamps burn. During upper beam operation,

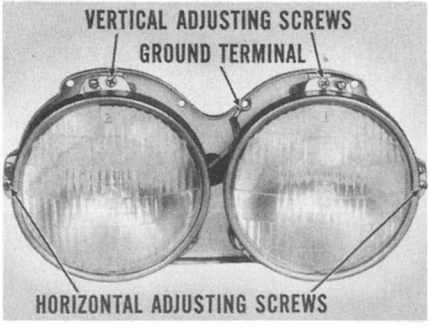
each lamp draws 37½ watts for a total draw of 150 watts. That's a lot of light being thrown out on the road. It is very important, therefore, that these headlamps be properly aimed so the owner will get full benefit from them. And, when properly adjusted, this increase in road illumination will not be objectionable to drivers of approaching cars.

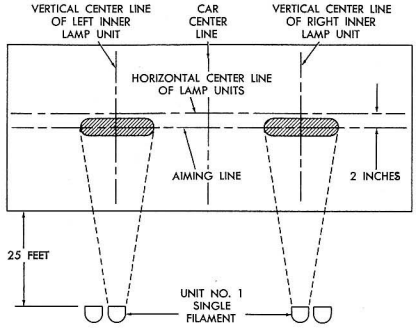
Adjusting Beams on Four-Headlamp Units. You can adjust the new headlamps by using a screen. First, be sure the car is properly level, tires correctly inflated. Also, there should be no extra weight in the car. But—and this is something new—the aiming should be done with a man sitting behind the steering wheel. Jounce the car from side to side so springs, shackles, and shock absorbers assume their normal positions. All four wheels must be at right angles with the screen.

On the screen, have two adjustable vertical lines, and one adjustable horizontal line to coincide with the center of each lamp. Move the screen up to the headlamps and center the vertical and horizontal lines. Next, move the screen 25′ ahead of the lamps. Remove the headlamp doors and you'll notice two adjusting screws on each lamp for beam adjustment. The top screws are for vertical adjustment. The side screws adjust beams horizontally.

Adjusting Inboard Lamps. Turn the lights on and switch them to the upper beam. Cover the outboard lamps so they won't show on the screen.

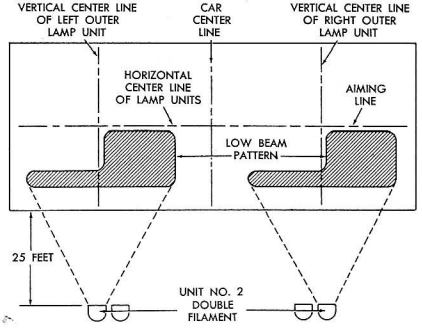
Adjust the vertical adjusting screw so the beam's horizontal centerline is located 2″ below the horizontal centerline on the screen. Repeat this for the other lamp.





Adjust the horizontal adjusting screw so the beam of light is equally divided by the vertical centerline on the screen. Repeat this on the other lamp, and then reinstall the two doors.

Adjusting Outboard Lamps. Switch the lamps to the lower beam so only the outboard lamps are burning. Adjust the vertical adjusting screws until the beam's top edge aims at the horizontal centerline on the screen. Repeat on the other lamp.



Next, adjust the horizontal adjusting screw until the left edge of the beam aims at the vertical centerline of the screen. Repeat this on the other lamp. Finally, install the two doors.

OUR JOB

As you know, a new-car owner takes great pride in the operation of his car. That's why it's mighty important for all of us to get acquainted with the new features and the new service procedures involved. It's especially vital when we get new cars to prepare for delivery.

The better we can perform our service operations, the better our new-car owners will like it. In other words, our success in 1957, depends on how satisfied we can keep our new-car customers.

RECORD YOUR ANSWERS TO THESE QUESTIONS ON QUESTIONNAIRE NO. 107

Torsion-bar springs are not made as a "right" or a "left"; any bar will fit either side. RIGHT **1** WRONG

The new suspension has only eight lubrication fittings: one in each steering knuckle ball joint and one in each of the four tie rod ball studs. RIGHT **2** WRONG

Two diagonal struts from the front of the frame to the lower control arms add rigidity to the frame. RIGHT **3** WRONG

Any car leveling adjustment you make will affect headlamp and front wheel alignment. RIGHT **4** WRONG

When you adjust *caster,* you also affect *camber,* so be sure to check both. RIGHT **5** WRONG

When changing camber, change shims equally at both brackets. RIGHT **6** WRONG

Toe-in on all new models is $\frac{3}{32}$" to $\frac{5}{32}$", with or without power steering. RIGHT **7** WRONG

You can adjust line pressure in the Torque-Flite transmission by means of an adjusting screw in the regulator valve. RIGHT **8** WRONG

Every 5,000 miles, remove the air cleaner element and clean it by swishing it in kerosene. RIGHT **9** WRONG

A car equipped with air conditioning needs antifreeze protection only during the extremely cold months. RIGHT **10** WRONG

LITHO IN U.S.A.