REFERENCE BOOK 67-2

MASTER TECHNICIANS SERVICE CONFERENCE

'67 STEERING COLUMN SERVICE

PLYMOUTH • DODGE
CHRYSLER • IMPERIAL

CHRYSLER MOTORS CORPORATION

A lifesaver...

That's the important role of the new impact-absorbing steering column, found on all the 1967 cars. It's a special design, calculated to reduce the possibility of the driver having his chest crushed by the column in case of a collision. Exhaustive tests, with high-speed cameras taking movies of dummies in staged accidents, showed the results of a steering column being forced rearward by the impact of a collision and the driver being thrown forward in the split second following the collision.

The accident pictures also clearly showed that there are actually two separate collisions. One, called the primary collision, is the contact of the car itself with the outside object. The secondary collision occurs when the driver, thrown forward by the primary collision, strikes the steering wheel. The importance of the separation of the two collisions will be readily seen in the description of what happens to the steering column during a collision, which starts off this reference book.

Later on in the book, you'll find a quick rundown on the service procedures and precautions for the impact-absorbing column. The special tools required and their correct usage are described, along with the details of installing the column in the car.

To wind up the reference book, there's an explanation of the tilt-type steering column that's available on some of our '67 cars. It's a little different from last year's model, so you'll want to know what to expect if you have to service one, or even if you only have to get to the turn-signal switch.

The contents of the book line up this way:

THE IMPACT-ABSORBING COLUMN 1
STEERING-COLUMN SERVICE TIPS 3
TILT-TELESCOPE TIPS 7

THE IMPACT-ABSORBING COLUMN

The 1967 impact-absorbing steering column is basically composed of four functional parts. There's a steering shaft, shift tube, column jacket and a special breakaway mounting bracket. Each component is designed to give way under a specific amount of impact. The shaft, tube and jacket will collapse under impact from either end of the column. However, the breakaway bracket will give way only under impact on the steering-wheel end. Let's take a look at what happens during a front-end collision.

First of all, we have to realize that in a head-on collision, or when a car runs into a solid object, there are actually two collisions involved. The first, or primary collision, is between the car and the other object. The secondary collision is between the driver and the steering wheel. This secondary collision happens a split second after the primary. For example, assuming a distance of nine inches between driver and steering wheel, and a speed of sixty miles an hour, the secondary collision will occur about a hundredth of a second after the primary.

THE IMPACT-ABSORBING COMPONENTS

Each of the components of the impact-absorbing steering column contributes to the cushioning effect which reduces the personal injury hazard to the driver in a collision. The mounting bracket prevents the column from moving rearward, but allows it to move forward under the impact from the secondary collision. Here's how the components work.

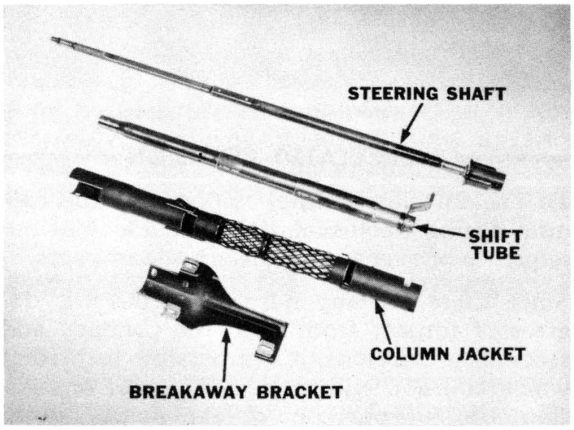

Fig. 1—Impact-absorbing components

THE STEERING SHAFT

The steering shaft is in two sections. The upper section, attaching to the steering wheel, is solid, and the lower section is hollow. Two flats on the upper section mate with internal flats in the lower section to transmit the turning force. The two sections are held in position by plastic inserts injected through holes in the hollow lower section. The plastic also fills two grooves around the solid upper section, forming a filler between the two sections. The plastic in the holes also acts as shear pins. Under impact, the pins shear, and the solid upper section telescopes into the hollow lower section, with the plastic in the grooves acting as a sliding brake.

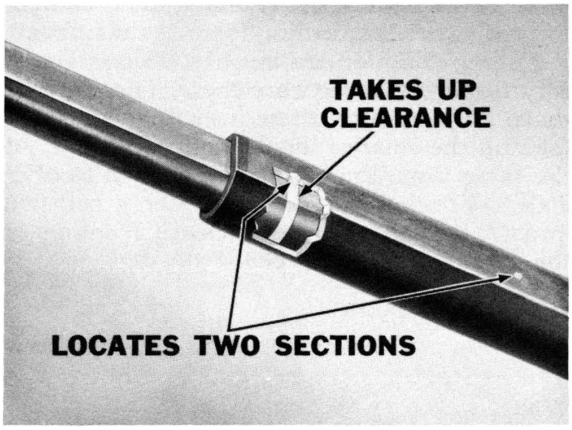

Fig. 2—Steering shaft construction

THE SHIFT TUBE

The shift tube is also in sections. The upper section is held in the shift lever housing by a set screw, as on previous models. There's a slightly larger center section, and a still larger lower section, which carries the lower shift lever. The three sections of the shift tube are also held together by plastic inserts. At each junction, there are two rectangular inserts and a single round insert. The ends of the rectangular slots are quite sharp, so that under impact, the metal shears the plastic, allowing the sections to telescope.

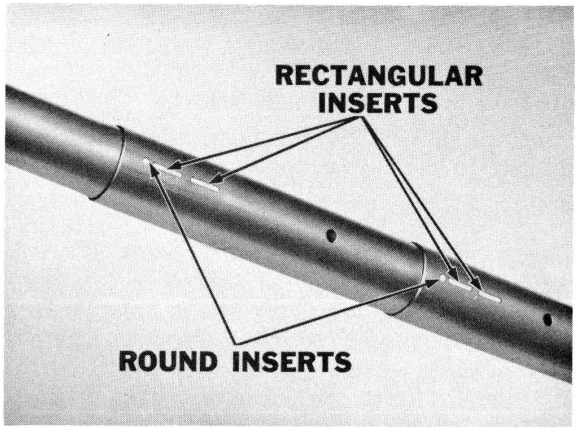

Fig. 3—Shift tube inserts

The plastic inserts in the tube section also perform the function of transmitting the turning forces when the shift lever is moved from one position to another. Over a long period of time, this turning force, along with small shocks and vibrations, could allow the sharp edges of the rectangular slots to slowly nibble away at the inserts, thus making them ineffective for either the turning force or the impact-absorbing function during a collision. That's why the round inserts are there. There are no sharp edges around these inserts, so they can take up the smaller shocks and vibrations. At the same time, they are small enough to offer little resistance to shearing under a collision impact, so the absorbent shearing action of the rectangular inserts is not affected.

THE COLUMN JACKET

A portion of the steering column jacket is perforated, cage-type construction. The cage is expanded around the circumference in five different places. Upon sufficient impact, the expansions allow the cage to fold, similar to the bellows of an accordion. As with the shaft and shift tube, the jacket will fold on impact from either end of the assembly.

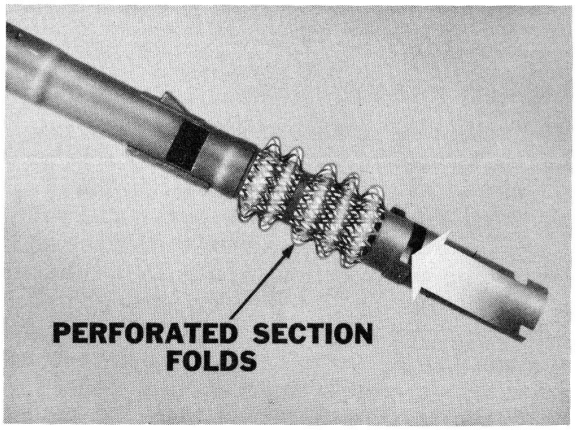

Fig. 4—Column jacket action

THE BREAKAWAY MOUNTING BRACKET

On the previous model cars, the steering column mounting bracket was a ring-type clamp, which held the column in position by friction alone. The new impact-absorbing column bracket bolts solidly to the column jacket with four bolts. The bracket is fastened to the instrument panel sheet metal and cowl strut with three screws through the breakaway capsules. These capsules are dovetailed into slots in the bracket and are retained by four injected plastic pins. The open ends of the slots are to the rear, so the plastic pins can be sheared by secondary (driver) impact on the steering wheel. However, a primary impact, from the front of the column, will merely force the closed end of the slots against the capsules. Since the capsules are solidly fastened to the panel, the column cannot move rearward, so the cage section will fold up.

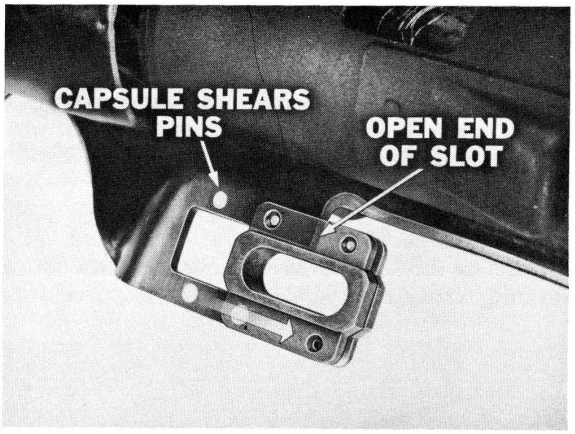

Fig. 5—Mounting bracket and capsules

A SIMULATED COLLISION

To explain clearly what happens to the column during a collision, let's take a look at the sequence of events that absorb the impacts.

Since there are any number of possible degrees of impact from both the primary and secondary collisions, it's impossible to predict which collision will require the most absorption. So, for purposes of explanation, we'll consider them separately.

PRIMARY IMPACT ABSORPTION

In a very severe head-on crash, one that is hard enough to drive the frame members rearward, the steering gear assembly will, naturally, also be driven rearward. The first impact on the lower end of the steering shaft will shear the plastic pins that hold the two shaft sections together. As the lower shaft and gear move farther back, the shift selector tube will also be subject to impact. So, the rectangular plastic inserts will be sheared off by the sharp metal edges of the tube, allowing the three sections of the tube to telescope together. When the impact reaches the column jacket, the breakaway mounting bracket prevents the jacket from moving rearward, so the cage section folds up. Each of these three components absorbs a portion of the primary impact.

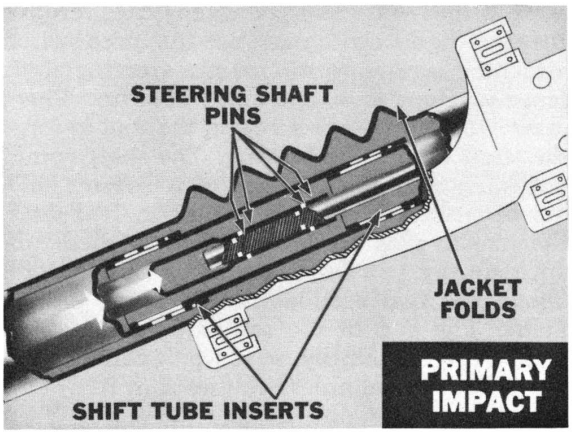

Fig. 6—Primary impact absorption

SECONDARY IMPACT ABSORPTION

Secondary impact, when the driver is thrown against the steering wheel, causes a sequence of events that are almost simultaneous. First of all, the plastic pins in the column bracket breakaway capsules shear, releasing the column from the instrument panel. The column assembly is forced downward by a ramp welded to the top of the column jacket. The ramp rides against the panel, so the steering wheel end of the column comes down, allowing the impact-absorbing components to telescope under the panel.

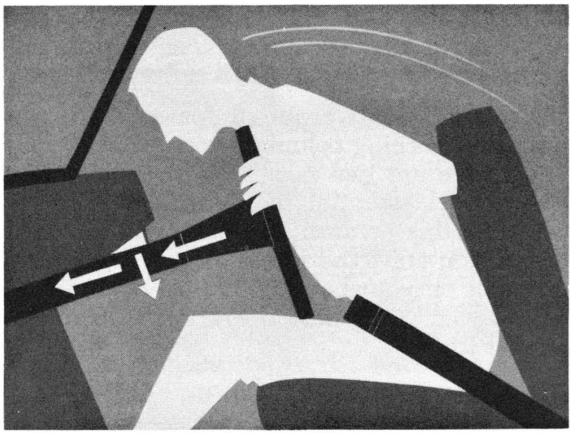

Fig. 7—Capsules release, ramp guides column

As soon as the bracket is free of the instrument panel, the steering column begins to telescope, and the shift tube starts the shearing action against the plastic inserts. At the same time, the column jacket perforated section starts the accordion action. All of these actions serve to decelerate the movement of the driver toward the instrument panel.

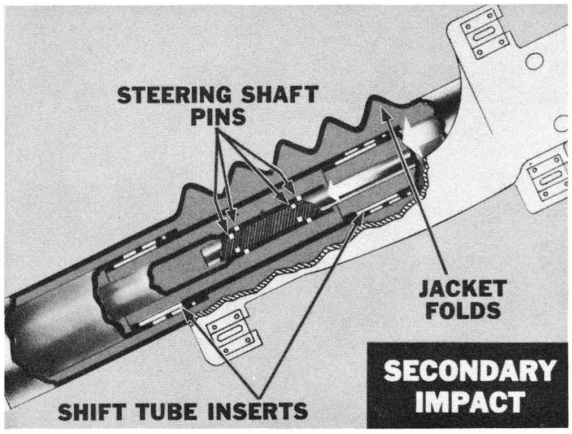

Fig. 8—Secondary impact absorption

STEERING-COLUMN SERVICE TIPS

Servicing this new steering column requires a somewhat different frame of mind than the previous models. There are some new, and highly important precautions that must be taken when you're working on the assembly, or even in handling the components. Most im-

portant, of course, is to keep in mind that the plastic shear pins are meant to do just that—shear. But, they won't serve any purpose if the shearing occurs on the bench, or while the assembly is being removed or installed in the car.

TOOL TALK

The special tools required for servicing the impact-absorbing column are classified essential. There are two new tools, and two from past model essential tool kits. Don't try to work on this column without them, In fact, before you start the job, make sure you have the tools on your bench. That way, you won't be tempted to try any operation without the correct tools.

THE WHEEL REMOVER

DON'T USE THAT HAMMER! On past models, some people got away with removing the steering wheel by tapping with a hammer. Don't try that with the impact-absorbing column. If you do, you're sure to shear the pins in the breakaway capsules, and you'll probably break the steering shaft shear pins, too. Use the steering wheel remover, tool C-3428B. Once the wheel is removed, the column assembly is much easier to handle when you're taking it out of the car.

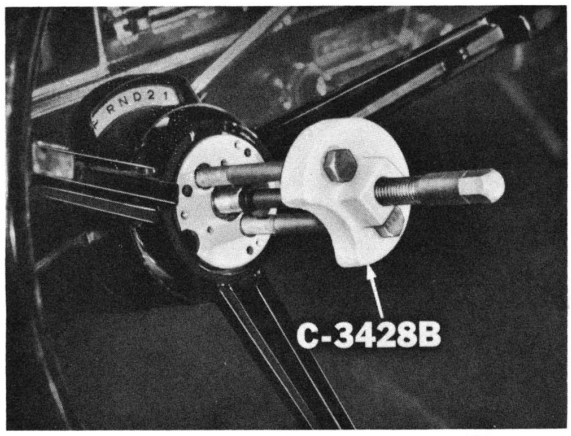

Fig. 9—Steering wheel remover

THE HOLDING FIXTURE

The new steering-column holding fixture, C-4048, fastens to the four mounting bracket screw holes, so you'll have to take the bracket off the column first. Then, clamp the holding fixture firmly in a vise. You might want to set the column at a slight angle to make it more convenient to work on.

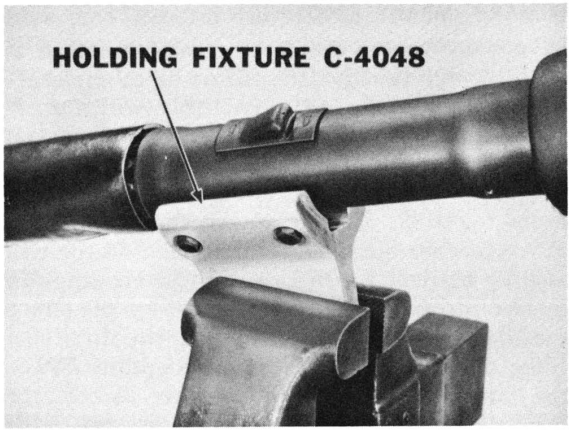

Fig. 10—A new special tool

THE SHAFT REMOVER

PUT THE HAMMER AWAY. You don't need it, and you can't use it. Instead, remove the turn-signal switch and use the three switch attaching screws to mount the steering shaft remover, tool C-4044 in the column. Then, merely turn the large screw in the tool to force the shaft out of the bearing. The shaft comes out fairly easily, so be careful it doesn't slide out of the assembly onto the floor. If it does, the plastic pins are almost sure to shear off. Incidentally, you don't have to worry too much about the two sections of the shaft pulling apart. The end of the solid upper section is staked after assembly, so it won't come out of the lower section unless you work at it.

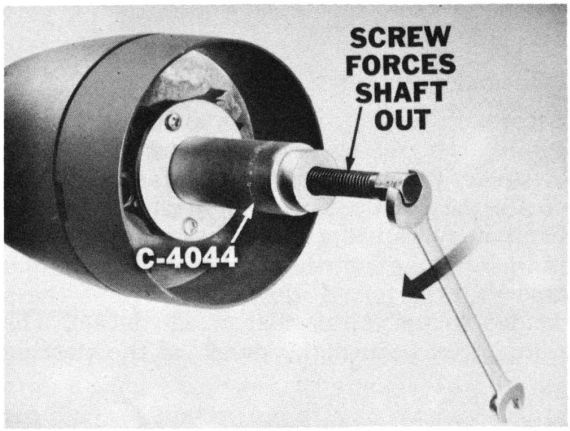

Fig. 11—The new shaft remover

NEW BEARING HOUSING

To remove the new bearing housing, simply loosen the two retaining screws about five turns each and lift the housing from the col-

umn assembly. These screws thread into square nuts inside tapered chambers in the housing. Loosening the screws allows the nuts to clear two square holes in the column jacket, freeing the housing from the jacket.

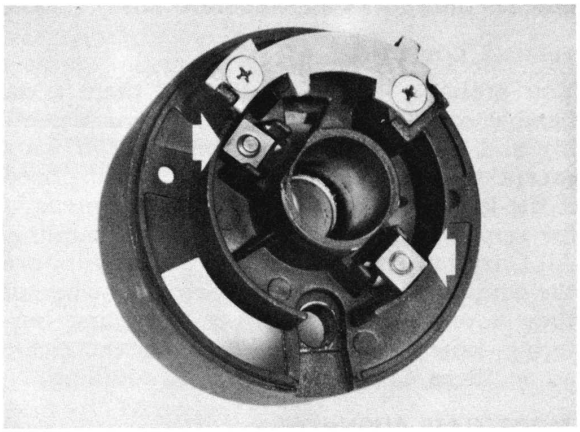

Fig. 12—Bearing housing screws

THE SHIFT TUBE

Removing the shift tube is a simple matter. First, pull the backup lamp switch lever out of the tube. Then, take out the lock screw, lift off the shift lever housing and slide the tube out through the lower end of the jacket. As with the steering shaft, be careful not to drop the tube or strike it on either end. If you do, the impact will at least partially shear the plastic inserts. Incidentally, when you're removing the shift lever from the housing, hold your hand over the top side of the lever to catch the anti-rattle spring. It could pop you in the eye when it clears the housing.

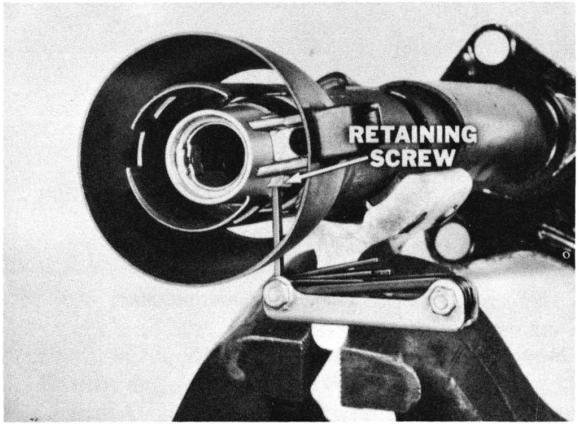

Fig. 13—Shift tube retainer

Speaking of shift levers and tubes, you'll find a shift tube in all cars, even if they are equipped with the console-shift TorqueFlite or the floor-shift, four-speed manual transmissions. Because of the perforated section of the column jacket, the shift tube is needed to provide rigidity.

STEERING SHAFT INSTALLER

The only other special tool required for the impact-absorbing column is the steering shaft installing tool, C-3879. This is not a new tool, having been introduced in 1962 to install the steering shaft upper bearing on the shaft. On the new column, the tool, used with the steering wheel retaining nut and washer, draws the shaft into the bearing in the bearing housing. Just turn the nut up tight enough to seat the lower snap ring against the bearing inner race.

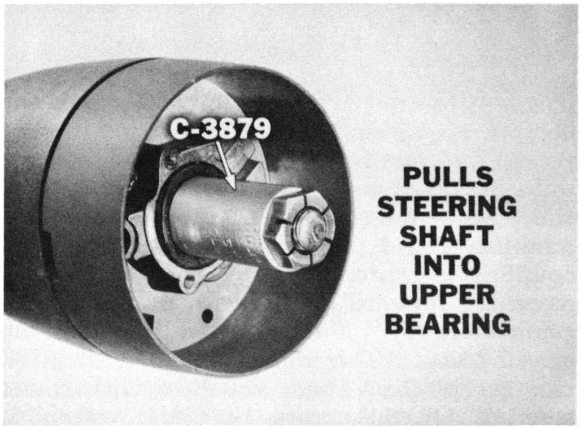

Fig. 14—Steering shaft installer

INSTALLATION TIPS

There are also some very important precautions to be followed during the installation of the steering column in the car. The column must be properly aligned and free from binding, and the "pot" coupling must be correctly positioned. Otherwise, you're in for some steering effort and returnability problems.

BRACKET ATTACHING SCREWS

Be sure you use the correct screws to attach the column-mounting bracket to the column. If you use longer screws, they'll go all the way into the column jacket and rub against the shift tube. That will cause hard shifting, and will affect the impact-absorbing qualities of the tube.

COUPLING CARE

Installing the "pot" coupling on the steering gear worm shaft requires some extra care, too. In fact, it's really a two-man job. Put the coupling on the shaft and install the roll pin.

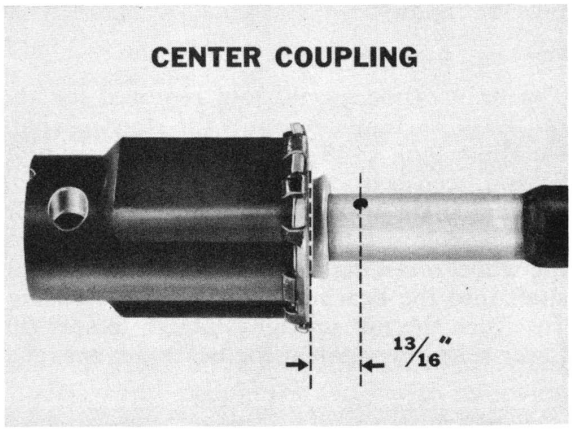

Fig. 15—Lower coupling position

Then, install the two rear nuts that attach the column-mounting bracket to the instrument panel, but don't tighten them. Before these nuts are tightened, you have to center the shoes inside the coupling to allow for an equal amount of end play in both directions. The coupling is centered by moving the column assembly forward or rearward until the coupling cover is $^{13}/_{16}$" from the gauge hole in the steering shaft. This dimension is used on all cars except the Valiant and Dart with power steering. On these cars, the measurement is from the coupling cover to the steel collar next to the nylon bushing in the end of the column jacket. If the car is equipped with Torque-Flite, the coupling cover must be 1¼ inches from the collar. On cars with manual transmission, the correct dimension is 2½ inches. But, before you measure, be sure the collar is tight against the bushing. When the coupling is centered, tighten the two rear mounting-bracket nuts to 95 inch-pounds.

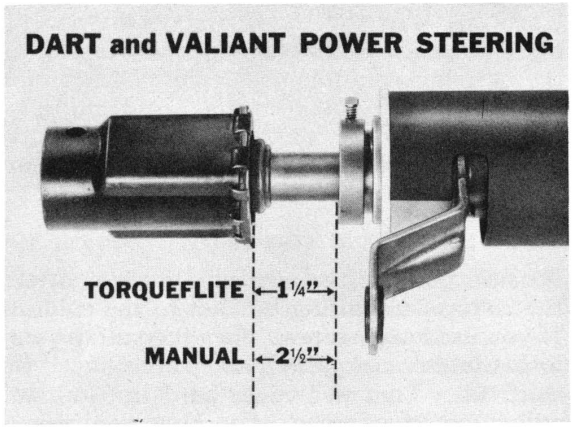

Fig. 16—Dart and Valiant coupling position

FLEXIBLE COUPLING

You probably have noticed that there is no flexible coupling between the column assembly and the "pot" coupling on any 1967 cars except the Imperial. But, don't be surprised if the local Police department brings a car in for service and you find a flexible coupling. All Chrysler Corporation police cars will have the coupling to cushion the extra punishment they have to take. The "pot" coupling centering dimensions are the same on these cars as on those without the flexible coupling.

FLOOR PLATE ALIGNMENT

As you know, column alignment has always been very important to steering effort and returnability. This is *especially* important on the impact-absorbing column, because it is not as rigid as previous columns. But, you can't get good alignment by prying the column into position. If it doesn't line up properly, and the floor plate is forced into the correct position, you're going to have a bind in the components.

SHIM THE GEAR

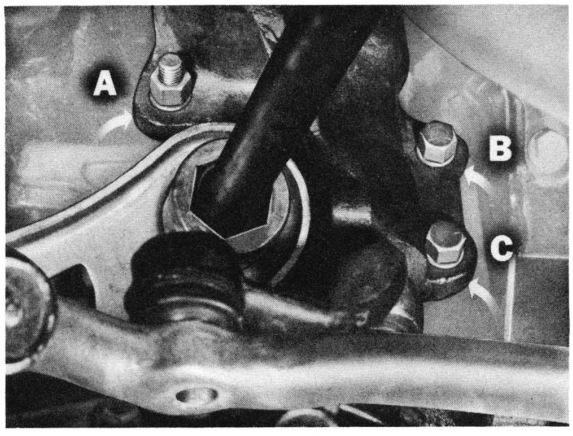

Fig. 17—Shim under steering gear

Move Plate:		Shim:
	UP	C
	DOWN	A and B
	LEFT	B and C
	RIGHT	A

If the floor-plate bolt holes don't line up with the holes in the fire wall, you can line them up by placing shims under the steering gear mounting pads. To raise the floor plate, put a shim under the lower pad. To lower it, shim under the two upper pads. If the plate must be moved to the left, shim under both right-hand pads. And, to move the plate to the right, put a shim under the left-hand pad. Don't use more than .090″ shim at any pad. Use the illustration and table to make things easier.

MOUNTING-BRACKET SHIMS

After the floor plate has been centered and installed, the front leg of the instrument panel mounting bracket is attached. On the Valiant, Dart, Belvedere and Coronet models, you may need to shim between the breakaway capsule and the attaching point. If there is more than .060″ gap above the capsule, add shims. Ideally, there will be no gap at all.

Fig. 18—Shim to avoid binding

ANOTHER METHOD

On all cars except those named above, it is not necessary to shim the forward leg of the bracket. Instead, there's a second bracket that attaches to the instrument panel support strut. This second bracket has elongated attaching holes to allow for vertical movement. So, to avoid binding the column assembly, simply loosen the two attaching screws at the elongated holes, tighten the column mounting-bracket breakaway capsule, and retighten the two attaching screws.

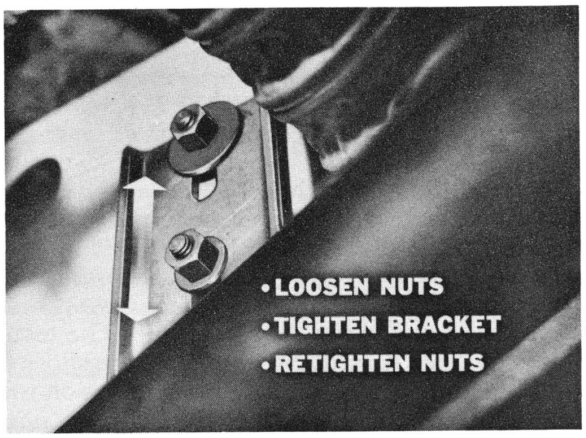

Fig. 19—Elongated holes, no shims

STEERING-WHEEL INSTALLATION

DON'T POUND the steering wheel onto the shaft. If you do, you'll wind up installing a new mounting bracket, and probably a new steering shaft, too. Just set the wheel on the end of the splines and draw it into place with the retaining nut and washer. The torque for the steering-wheel nut is 24 foot-pounds.

TILT-TELESCOPE TIPS

The new tilting, telescoping steering column assembly for 1967 has seven tilt positions, instead of the six positions in the '66 model. The amount of telescoping is the same as before, at 2¾ inches. This year, the option is available on Furys, Polaras, Monacos, all the Chryslers and the Imperial. The tilt-type assembly has all the impact-absorbing features of the standard column, so there's no need to cover them again, except in some instances where the service procedures are different.

HOW DOES IT WORK?

The tilting mechanism of the tilt-type assembly consists basically of the release lever, which attaches to the shoe actuator, two lock shoes and a locking pin. The upper section of the tilt housing swings up and down on two pivot pins. A nylon ball joint in the steering shaft transmits the steering action from the wheel to the lower shaft.

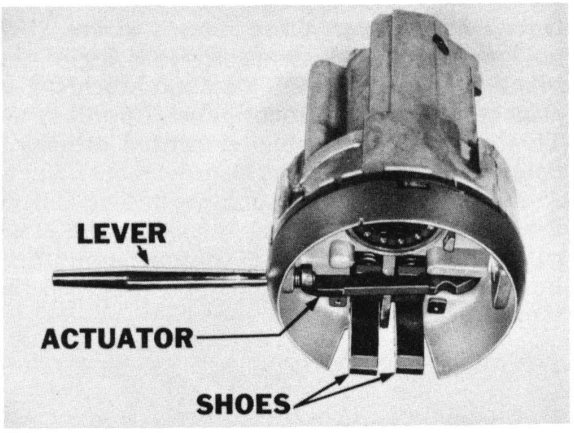

Fig. 20—Tilting mechanism

STAGGERED LOCK SHOES

The two lock shoes have notches, similar to gear teeth, which lock the wheel in the various positions by meshing with the locking pin. One of the shoes has four teeth, the other has three teeth. Only one of the shoes will be in mesh with the pin at any one time. The teeth are staggered, so that when one of the shoes is in mesh, a tooth on the other shoe rides on top of the pin. If the wheel is tilted to the next position, the shoes reverse their actions. The shoe that was in mesh now rides on the pin, while the other shoe meshes.

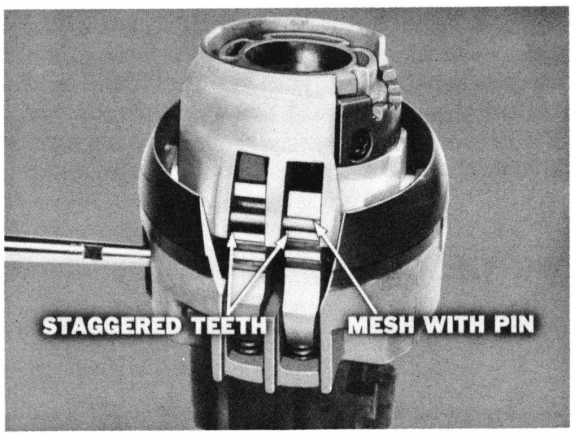

Fig. 21—Shoe locking action

SHOES ARE SPRING-LOADED

The shoe teeth are forced into mesh with the pin by springs. To release the shoes, the driver simply pulls upward on the release lever, which moves the actuator against the shoes, raising them away from the pin against the spring force. When the wheel is in the desired position, and the lever is released, the springs then push one of the shoes into mesh, and the other shoe rides on top of the pin.

ANOTHER SPRING LOAD

You'll recall that on previous models, there were two tension springs at the top of the tilting assembly which raised the wheel to the uppermost position when the lever was released. In the 1967 model, there is a single compression-type spring at the lower part of the assembly. The purpose is the same, but, as we'll see later, the new spring is much easier to remove and replace.

TELESCOPE OPERATION

The telescoping function of the tilt-type steering column is controlled by the cam-like action of a locking wedge inside the upper yoke of the steering shaft. The wedge, which looks exactly like half of a Woodruff key, is in a slot near the lower end of a shaft inside the yoke. The other end of this inner shaft is splined and threaded to accept the steering wheel. The inner shaft is also hollow, and contains a locking rod. On the steering wheel end of the shaft, the locking rod bore is threaded to take the locking ring.

THE LOCKING ACTION

Turning the locking ring into the end of the inner shaft pushes the locking rod forward in the shaft. The rod is in contact with a bumper just behind the locking wedge, so the movement of the rod and bumper also moves the wedge. Since the forward end of the wedge,

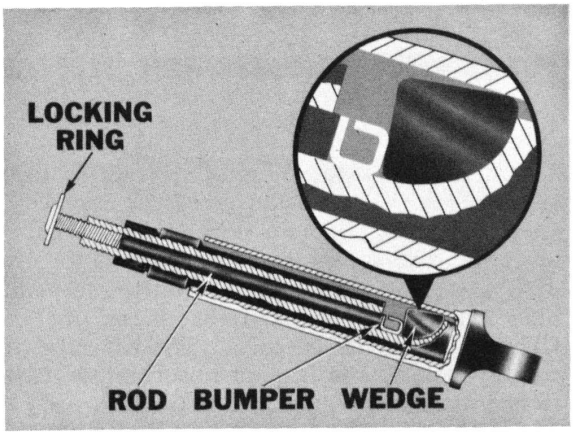

Fig. 22—Telescope locking

and the slot that carries it, are curved upward, the front of the wedge is forced upward. A keyway, in the inside diameter of the yoke, transmits the steering force from the inner shaft to the yoke, because the locking wedge rides in the keyway. When the wedge is forced upward from its slot in the inner shaft, it pushes against the base of the keyway. As a result, there is also a downward force between the inner shaft and the yoke. The combination of this downward force and the force of the wedge against the base of the keyway, lock the inner shaft in position. Should the driver wish to select another steering-wheel position, he releases the shaft by loosening the locking ring and moves the wheel and, thus the shaft, to his preferred position, and again tightens the locking ring.

TIPS AND TOOLS

Since most of the procedures and tools used on the tilt-type column differ from the standard column, it will be well to cover them here. Two of the tools used on the standard column are also used on the tilt-type: the holding fixture and the steering-wheel remover. Two of the tilt-type tools are new this year, and two other tools, used on previous models, will need to be reworked to make them compatible with the 1967 column. The reworking will not affect their use on the previous models.

THE STEERING WHEEL ASSEMBLY

First of all, of course, you should take the steering wheel off the column before removing the column from the car. And, there are some disassembly and assembly operations you can perform without taking the column out, but you'll have to be mighty careful not to put a lot of strain on the mounting-bracket breakaway capsules. So, to remove the steering wheel, start by prying the cap and ornament from the wheel. Just under the cap, there's a small yoke, held by two screws, and then the locking flange, which is attached to the locking ring by three screws. The steering-wheel remover, C-3428B, uses these three screws to mount on the column. Be sure to use the tool. DON'T HAMMER THE WHEEL.

If you have to service the horn switch, remove the hub cover. It's attached to the horn switch by four screws inside the cover. Then, remove the three screws that attach the horn switch to the wheel hub.

COLUMN REMOVAL

This description of the removal procedure will concentrate on those steps which vary from the procedure used on the standard impact-absorbing column. The usual steps, such as disconnecting the battery cable and shift linkage will not be included. But, there are some steps that vary between models. For instance, if you're working on a Chrysler or a Fury, don't forget to disconnect the TorqueFlite gearshift indicator link before lowering the column from the instrument panel. And, on Imperials, remember that the parking brake vacuum release valve hose must be disconnected. Be sure to remove the screws from the floor plate before the instrument panel bracket is disconnected. Incidentally, since the tilt-type steering column is used only on those cars with the vertically adjustable second bracket under the instrument panel, don't look for shims at the forward leg of the mounting bracket. Shims are not necessary on these cars.

DISASSEMBLY

To prepare for column disassembly, remove the column mounting bracket and the two wiring troughs. Then, install the column-holding fixture, tool C-4048. Before you clamp the fixture and column in a vise, disassemble the "pot" coupling and, using an arbor press, remove the shoe pin from the shaft. (This is not necessary on Imperials, since the steering shaft can be disconnected at the flexible coupling.) The coupling and shoe pin have to be removed, since the shaft is removed from the upper end of the column.

WIRES, LEVERS AND SWITCHES

Remove the turn-signal and horn-wire connector by depressing the locking tabs on the sides of the wire terminals. Then remove the backup lamp switch and lever. On Imperials, the backup lamp switch is combined with the parking brake vacuum release valve. Next comes the gearshift indicator. On Imperials, the indicator is retained by an Allen screw on the lower side of the column. On the other cars, the indicator is retained by a spring clip. Simply pry one end of the clip loose with a screwdriver and snap the indicator out. Remove the turn-signal and tilt-release levers.

REWORK TOOL

Special tool C-3990 was designed for the 1966 tilt-type steering column, to remove the tilt actuator cover. To use the tool on the 1967 assembly, you should cut about a half inch off each arm. Then assemble the tool with a slide hammer from tool C-3752 and one of the bolts from tool C-3954. Install the arms of the remover in the actuator cover and bump the cover off the column with the slide hammer. Incidentally, reworking the tool does not affect its use on the 1966 tilt-type column.

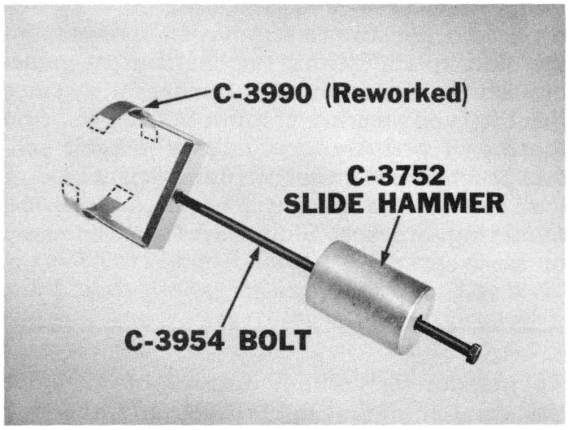

Fig. 23—Actuator cover remover

HORN AND TURN SIGNAL

The horn contact carrier is retained by a "C" ring. Tool C-4017 is used to compress the contact carrier spring, so the "C" ring can be removed. To install the tool, first turn the tool screw all the way into the end of the steering shaft, and tighten it enough to force the telescope locking wedge into the upper yoke keyway. Then, position the body of the tool on the raised shoulder of the contact carrier. Make sure the open side of the tool is in position to permit removal of the "C" ring. Turn the tool nut down to compress the upper bearing spring and lift the "C" ring from the shaft. When the tool, contact carrier and spring are removed, the three turn-signal attaching screws are accessible. Remove the screws and pull the switch from the housing. Be careful, when you're pulling the wires through the housing, that you don't damage the wire terminals.

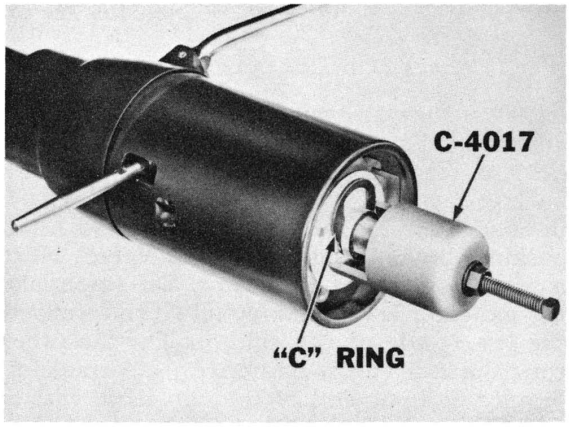

Fig. 24—Horn contact carrier compressor

THE TILT SPRING

The single tilt spring, in the lower part of the actuator housing, is retained by a small plug with two ears which fit into slots in the housing, much like the tangs on a taillight bulb. To remove the retainer and spring, put the release lever into the actuator and tilt the assembly into the highest tilt position. Push the retainer inward with a screwdriver in the slot, and turn the retainer to the left to release the ears. The retainer and spring will slide out of the housing easily. Don't lose the guide inside the spring.

Fig. 25—Only one tilt spring

TILT PIVOT PINS

There are two pivot pins in the tilt assembly; one on each side. Tool C-4016 is used to remove the pins. This is the same tool used on the 1966 column, but it needs a little bit of reworking for best results on the 1967 column.

Just grind about 1/8-inch off one side of the tool, so it will clear the shift lever housing. Then, simply turn the small threads into the pivot pin and turn the tool nut down to pull the pin. With the pins removed, lift the tilt release lever to disengage the lock shoes, and pull the actuator assembly from the column. Be careful not to drop the upper and lower bearing races out of the actuator assembly.

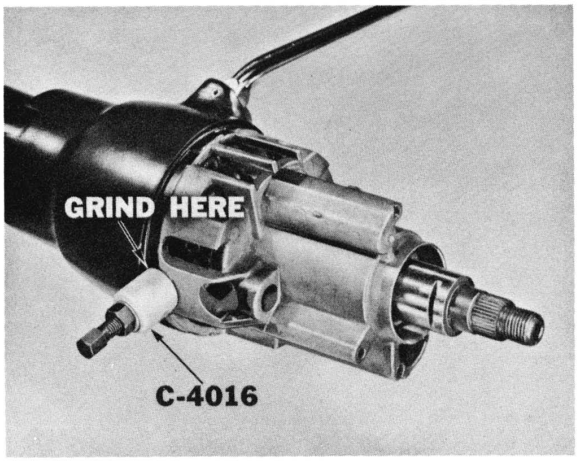

Fig. 26—Tilt pivot pin remover

STEERING SHAFT REMOVAL

Unlike the standard impact-absorbing column, the steering shaft in the tilt-type column is removed from the upper end of the column assembly. That's why the "pot" coupling has to be removed from the lower end of the shaft. And, as stated earlier, on the Imperial column, you don't have to disassemble the "pot" coupling; just drive out the roll pin at the flexible coupling. On either type of column, once the coupling is removed from the lower end of the shaft, removal of the shaft from the column is a simple matter of pulling it out through the upper end of the column.

THE SPHERICAL JOINT

You probably won't ever have to disassemble the spherical joint that joins the upper and lower sections of the steering shaft. If you do, it's a very simple matter. Mark the two yokes for reference during reassembly. Depress the coil spring under the inner shaft stop plate, pull out the stop plate and remove the spring. Then turn the two yokes to a 90-degree angle and slide one yoke off the sphere.

GETTING TO THE SHIFT TUBE

Four bolts retain the tilt actuator support in the jacket. After the support is removed, there's a retainer ring, thrust washer and stop plate. At the lower end of the column, remove the lower bearing support and bearing. The plastic bearing support has snap-type fingers which retain it in the jacket. Push in the fingers and work the support out of the jacket.

REMOVE THE SHIFT TUBE

DON'T BEAT ON IT! There's a new special tool for removing the shift tube from the tilt-type column. C-4045 consists of a body and a long screw with a hook on one end. The hook goes into a slot in the side of the tube and contacts the lower end of the shift tube support housing. The body of the tool fits into the shift tube, with a shoulder that bears on the end of the tube. So, with the screws hooked under the housing and the body shoulder against the end of the tube, turn the nut down to force the tube out of the housing. Just make sure the lower transmission shift lever is lined up with the opening in the lower end of the column jacket.

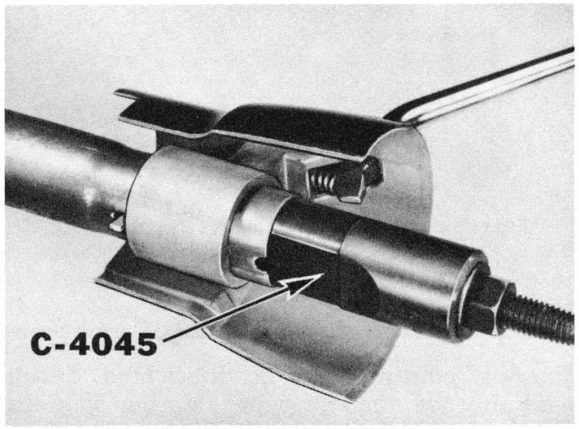

Fig. 27—Shift tube remover

ACTUATOR HOUSING

If you have to disassemble the tilt actuator housing, drive out the lock shoe pivot pin and remove the shoes and springs from the housing. Then, drive the release actuator pin out of the housing from the inside of the housing, and remove the actuator and spring.

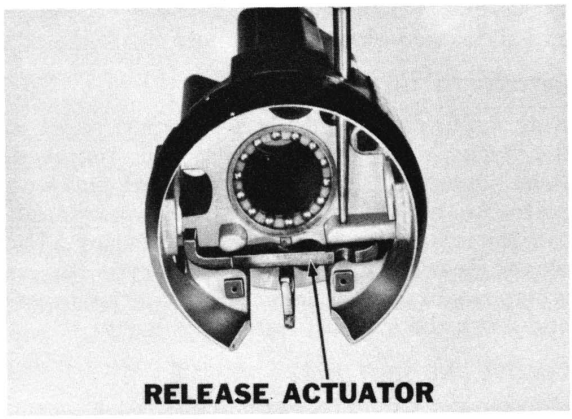

Fig. 28—Drive out release lever pin

THE TELESCOPING COMPONENTS

All of the components that have to do with the telescoping feature of the tilt-type column are located in the upper yoke. The inner shaft slides freely out of the yoke, and the locking rod, locking wedge and bumper are all loose in the inner shaft.

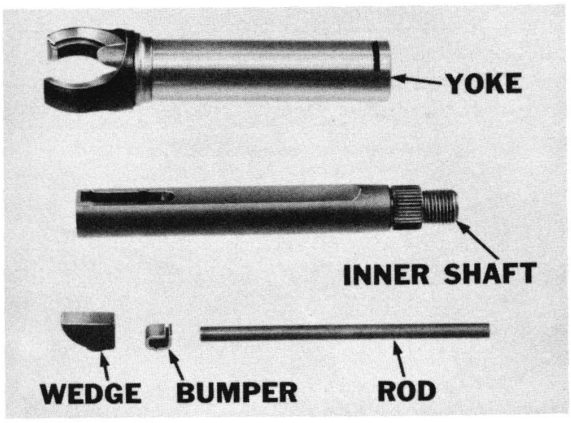

Fig. 29—Telescoping components

PUT IT BACK TOGETHER

Various points must be lubricated during assembly of the tilt-type steering column. Where lubrication is required, use only a high melting point number 2 front wheel bearing grease. And, don't forget that careful handling is the order of the day.

SHIFT TUBE

NO HAMMERS, PLEASE! Slide the shift tube into the bottom of the column jacket and start it into the housing by hand. Tool C-4046 is the new shift-tube installer. The lower end of the tool screw is shaped exactly like the inside of the top of the shift tube, with a flat section on one side. Slide the screw into the tube until the end of the screw is past the flat section of the tube. Turn the screw about half a turn, so the flat section is opposite the flat section of the tube. Hold the screw and turn the nut down until the shift tube is firmly against the bottom of the tool body, and remove the tool. The thrust washer and retainer ring go in next. Install the actuator support and torque the four screws to 50 inch-pounds.

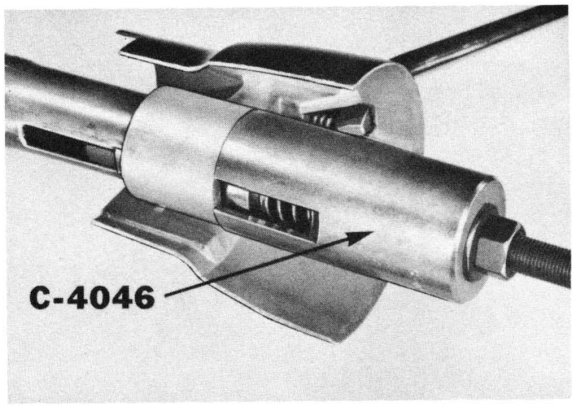

Fig. 30—Shift tube installer

LOWER BEARING SUPPORT

If you had to replace the lower steering shaft bearing, press the new bearing into the plastic bearing support. The bearing support has retaining fingers that snap into holes in the column jacket. The lower end of the shift tube also pilots in the bearing support. Line up the tube and the "snap-in" fingers, and push the bearing and support into the jacket.

STEERING SHAFT

Assemble the two yokes and the centering sphere. Use plenty of grease. Lubricate the coil spring and stop plate and install them in the sphere and coat the entire surface of the sphere with lubricant. Assemble the inner shaft, locking wedge, bumper and locking rod with plenty of grease, and slide the entire assembly into the upper yoke. If you have an Allen screw to fit the inside of the inner shaft, you'll find the shaft assembly easier to handle while you're putting it into the column. Turn the screw down until the inner shaft is locked to the yoke. Be careful when you're installing the shaft, not to hit the lower bearing support hard enough to break the plastic support retaining fingers.

TILT ACTUATOR

Assemble the actuator housing (lock shoes and springs, and release lever and spring) and put the lower bearing race in the housing, with plenty of lubricant. Line up the actuator housing pivot pin holes with the holes in the support, and drive the pivot pins in with a plastic hammer. Then, install the tilt spring, with the seat and retainer, and the turn-signal switch.

STEERING SHAFT END PLAY

On Plymouth, Dodge and Chryslers, there's a provision for end play adjustment at the lower end of the steering shaft. It consists of a spring, adjuster-sleeve assembly, washer and retaining ring. So, install them on the shaft in that order and make sure the retaining ring is firmly seated in the groove. Turn the adjuster-sleeve assembly in until there is no end play in the shaft. Back off the sleeve portion of the assembly 1/8 to 1/4 turn to establish the correct end play. Then, use a hot soldering iron to stake the sleeve and adjuster together. This adjustment is not necessary on Imperials, since these cars have the flexible coupling.

FINISHING OFF THE TOP END

Install the upper bearing race and race seat in the tilt actuator housing, using lubricant freely. Then, stack the following parts in the following order: upper bearing spring seat, spring and horn contact carrier. Be sure the "C" ring seat on the carrier is lined up with the "C" ring slots in the upper yoke. Use the contact carrier compressor tool, C-4017 to compress the spring, and slide the "C" ring into place. Notice that there's a right and wrong way for the "C" ring. When it's installed, it must be symmetrical around the upper yoke.

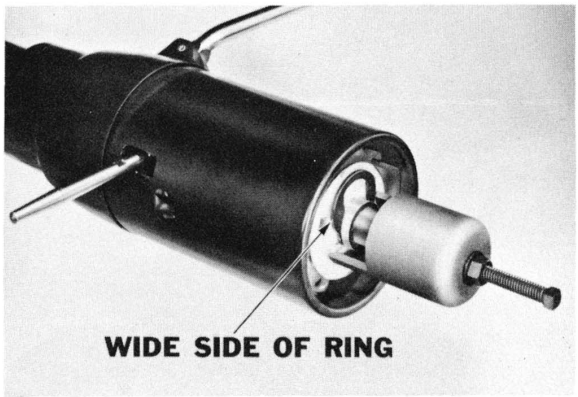

Fig. 31—"C" ring installer

ACTUATOR COVER

NOW you can use the hammer, but lightly, please. Put the rubber washer on the steering-wheel shaft, and position the actuator cover with the key in line with the keyway in the actuator housing. Use tool C-4018 to drive the cover into place. It doesn't take much of a blow, only enough to snap it over the housing.

Fig. 32—Actuator cover installer

CAUTION: Don't try to use the actuator cover installer when the column is installed in the car. If you do, you'll break the plastic pins in the breakaway capsules. To do any operation that requires removal of the cover, take the column out of the car.

LOWER COUPLING

Assemble the "pot" coupling on the lower end of the steering shaft. Be sure the shoe pin is exactly centered in the shaft. If it's off center, you'll wind up with a "lumpy" steering problem. And, of course, on Imperials, simply install the flexible coupling on the shaft. Be sure to use a new roll pin. Finish off the job by installing the gearshift indicator and the back-up-lamp switch.

INSTALLATION

Take the holding fixture off the column assembly and install the wiring troughs and the instrument panel mounting bracket. Tighten the four attaching screws to 200 inch-pounds. BE SURE TO USE THE SHORT SCREWS. All other installation procedures are exactly the same as for the standard impact-absorbing column.