

GENERAL MOTORS

**Chevrolet
GMC**

DESCRIPTION

All the steering columns are similar in that they have internal shift linkage (except floor shift models), column locking devices, and bearing adjustment procedures. The steering columns used on "C" and "K" models have the energy-absorbing safety feature.

REMOVAL & INSTALLATION

"C" & "K" MODELS

Removal – 1) Loosen front of dash mounting plates. Disconnect battery ground cable. Remove steering wheel. Remove nuts and washers securing flanged end of steering shaft to flexible coupling. Disconnect transmission control linkage from column shift tube levers.

2) Disconnect steering column harness at connector. Disconnect neutral start switch and back-up lamp switch connectors if so equipped. Remove floor pan trim cover screws and remove cover. Remove screws securing two halves of floor pan cover, then remove screws securing halves and seal to floor pan and remove covers. Remove transmission indicator cable if so equipped.

3) Move front seat as far back as possible to provide maximum clearance. Remove two column bracket-to-instrument panel nuts and carefully remove column from vehicle, rotating column so that shift levers will clear hole in floor pan.

Installation – 1) Assemble floor pan covers and seal and install on column. Place column in vehicle then install and tighten coupling bolts. Loosely assemble nuts at instrument panel bracket. Position lower clamp and tighten attaching nuts. Tighten nuts at instrument panel bracket.

2) Install floor seal and cover bolts and tighten. Install transmission indicator cable if equipped. Install instrument panel trim cover. Connect transmission control linkage at shift tube levers. Install steering wheel and connect battery ground cable. Tighten front of dash mounting plates. Check coupling-to-steering flange dimension and lower bearing adjustment (see Adjustments), adjust as required.

"G" & "P" MODELS

Removal – 1) Disconnect battery ground cable. On column shift models, disconnect shifter rods at lower end of column. On "G" models, remove steering shaft flange-to-flexible coupling bolts. On "P" models, remove intermediate steering shaft, upper universal yoke-to-steering shaft pinch bolt. Mark coupling to shaft relationship. Remove column clamp screw(s) on engine side of firewall if equipped, and slide cover and seal down on column.

2) From inside vehicle, remove screws from floor pan cover and slide cover and seal up column. Remove steering wheel and reinstall retaining nut and washer to prevent dislocation of steering shaft. Disconnect directional wiring harness. Standard column with automatic transmission: disconnect conductor tube for transmission indicator at instrument panel. Tilt column with automatic transmission: disconnect single wire at fuse block and unclip it from parking brake bracket.

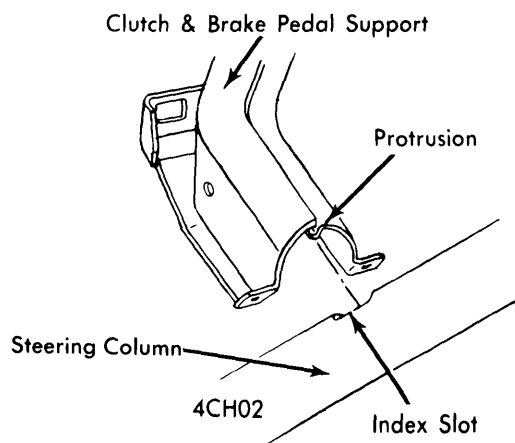
3) Remove cap screws from column support bracket at dash panel. Carefully lower, then raise and withdraw column assembly, rotating it so that shift levers clear hole in floor pan.

Installation ("P" Models Only) – 1) Applying 50 ft. lbs. force on steering wheel end of steering shaft, adjust lower bearing preload to allow steering shaft end play. Tighten shaft clamp on pot joint bolt. Carefully insert lower end of column assembly into hole in floor pan. Guide steering shaft into universal yoke, lining up marks made at removal. Install yoke pinch bolt and tighten. Pinch bolt must pass through shaft undercut.

2) Position and attach lower clamp mounting bracket to firewall. Locate steering column protrusions against floor pan bracket while at the same time, aligning protrusion in brake and clutch pedal support with index slot in steering column. Install column-to-bracket clamp and tighten bolt.

3) Position steering column-to-dash panel bracket and install and tighten bolts. Install seal at floor pan, then install bracket screws and tighten. Install dash panel trim plate, if equipped. Connect transmission shift linkage.

4) Connect directional signal wiring harness. On non-tilt columns with automatic transmissions, connect conductor tube for transmission indicator at instrument panel. Install steering wheel and connect battery ground cable.



Installation ("G" Models Only) – 1) Applying a force on steering wheel end of steering shaft, adjust lower bearing preload to allow steering shaft end play as indicated in illustration. Install plastic spacers onto flexible coupling align-

Steering Columns

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ment pins. From inside vehicle, carefully insert lower end of column through floor pan opening, guiding steering shaft flange onto flexible coupling. Install and tighten flange-to-coupling bolts.

2) Locate index slot in column jacket with protrusion on clutch and brake pedal support. Loosely install column-to-dash bracket and screws. Push column down until steering shaft flange bottoms on plastic spacers on flexible coupling and tighten bracket screws.

3) Remove plastic spacer from alignment pins. Check coupling-to-steering shaft flange clearance; if not within specifications, bracket screws must be loosened and column raised or lowered as required. Retighten screws.

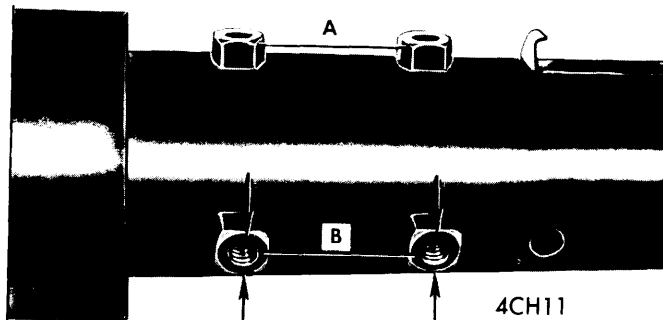
4) Push floor pan seal to floor pan; install and tighten screws. Connect directional signal switch wiring harness. On vehicles with automatic transmissions, connect conductor tube for transmission indicator to instrument panel. Install steering wheel. Connect transmission linkage and battery ground cable.

OVERHAUL

"C" & "K" MODELS WITHOUT TILT WHEEL

Disassembly - 1) Remove four dash panel bracket-to-column screws and lay bracket in safe place to prevent damage to mounting capsules. Place column in a vise using both weld nuts of set "A" or "B". **CAUTION** - Do not place column in vise by clamping onto only one nut or by clamping into sides of nut not indicated by arrows in illustration.

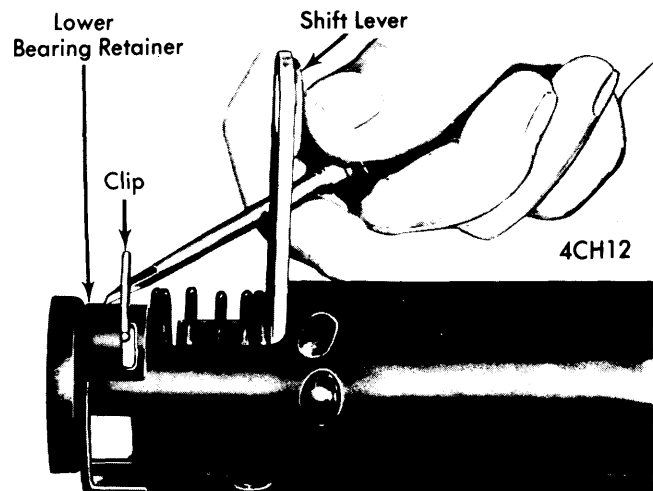
2) Remove directional signal switch, lock cylinder, and ignition switch. Drive out upper shift lever pivot pin and remove shift lever (if equipped). Remove upper bearing thrust washer. Remove four screws attaching directional signal and ignition lock housing to column and remove housing assembly. Remove thrust cap from lower side of housing.



INSTALLING STEERING COLUMN IN VISE

3) Lift ignition switch actuating rod and rack assembly, rack preload spring, and shaft lock bolt and spring assembly out of housing. Remove shift lever detent plate (shift gate). Remove ignition switch actuator sector through lock cylinder hole by pushing firmly on block tooth of sector with a blunt punch. Remove gearshift lever housing and shroud from jacket assembly (transmission control lock tube housing and shroud on floor shift models).

4) Remove shift lever spring from gearshift lever housing (lock tube spring on floor shift models). Pull steering shaft from lower end of jacket assembly. Remove two screws holding back-up switch or neutral start switch to column and remove switch. Remove lower bearing retainer clip.



REMOVING LOWER BEARING RETAINER CLIP

5) On vehicles with automatic transmission or floorshift, remove lower bearing retainer, bearing adapter assembly, shift tube thrust spring and washer. Lower bearing may be removed from adapter by light pressure on bearing outer race. Slide out shift tube assembly.

6) On vehicles with manual transmission and column shift, remove lower bearing adapter, bearing and 1st-Reverse shift lever. Lower bearing may be removed from adapter by light pressure on bearing outer race. Remove three screws from bearing at lower end and slide out shift tube assembly.

7) On all models with column shift, remove gearshift housing lower bearing from upper end of column.

Reassembly - 1) **NOTE** - Apply a thin coat of lithium soap grease to all friction surfaces. Install sector into directional signal and lock cylinder housing. Install sector in lock cylinder hole over sector shaft with tang end to outside of hole. Press sector over shaft with blunt tool. Install shift lever detent plate onto housing. Insert rack preload spring into housing from bottom side. Long section should be toward handwheel and hook onto edge of housing.

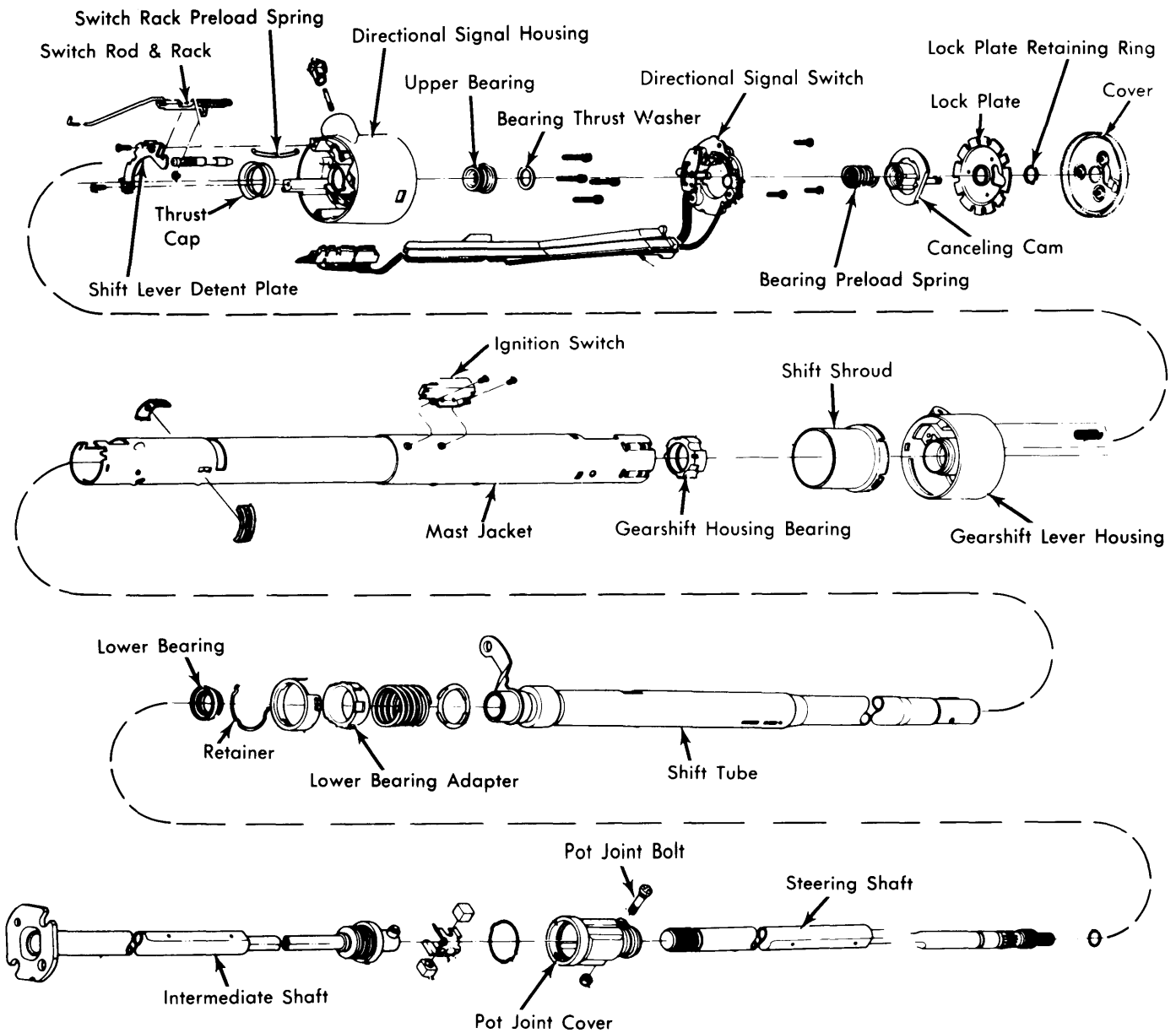
GENERAL MOTORS (Cont.)

2) Assemble locking bolt onto crossover arm on rack and insert rack and lock bolt assembly into housing from bottom with teeth up (toward handwheel) and toward centerline of column. Align first tooth on sector with first tooth on rack; if aligned properly, block teeth will line up when rack assembly is pushed all the way in.

3) Install thrust cup on bottom hub of housing. Install gearshift housing lower bearing. Insert bearing from very end of jacket. Aligning indentations in bearing with projections on jacket. **CAUTION** — If bearing is not properly installed, it will not rest on all of stops provided.

4) Install shift lever spring into gearshift lever (or lock tube) housing. Install housing and shroud assemblies onto upper end of mast jacket. Rotate housing to be sure it is seated in bearing. With shift lever housing in place, install directional signal and lock cylinder housing onto jacket. Gearshift housing should be in "PARK" position and rack pulled downward. Be sure directional signal housing is seated on jacket and install and tighten four screws.

5) Press lower bearing into adapter assembly. Insert shift tube assembly into lower end of jacket and rotate until upper shift tube key slides into housing keyway.



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"C" & "K" MODELS COLUMN ASSEMBLY

Steering Columns

GENERAL MOTORS (Cont.)

6) On vehicles with automatic transmission or floor shift, Assemble spring and lower bearing and adapter assembly into bottom of jacket. Holding adapter in place, install lower bearing reinforcement and retainer clip. Be sure clip snaps into jacket and reinforcement slots.

7) On vehicles with manual transmission and column shift, loosely attach three screws in jacket and shift tube bearing. Assemble 1st-Reverse lever and lower bearing and adapter assembly into bottom of jacket. Holding adapter in place, install bearing reinforcement and retaining clip. Be sure clip snaps into jacket and reinforcement slots. Place a .005" shim between 1st-Reverse lever and lever spacer and turn upper shift tube bearing down and tighten three screws. Remove shim.

8) Install neutral start or back-up switch. Slide steering shaft into column and install upper bearing thrust washer. Install directional signal switch, lock cylinder assembly and ignition switch. Install shift lever and pin. Remove column from vise. Install dash bracket to column and tighten screws.

"G" & "P" MODELS WITHOUT TILT WHEEL

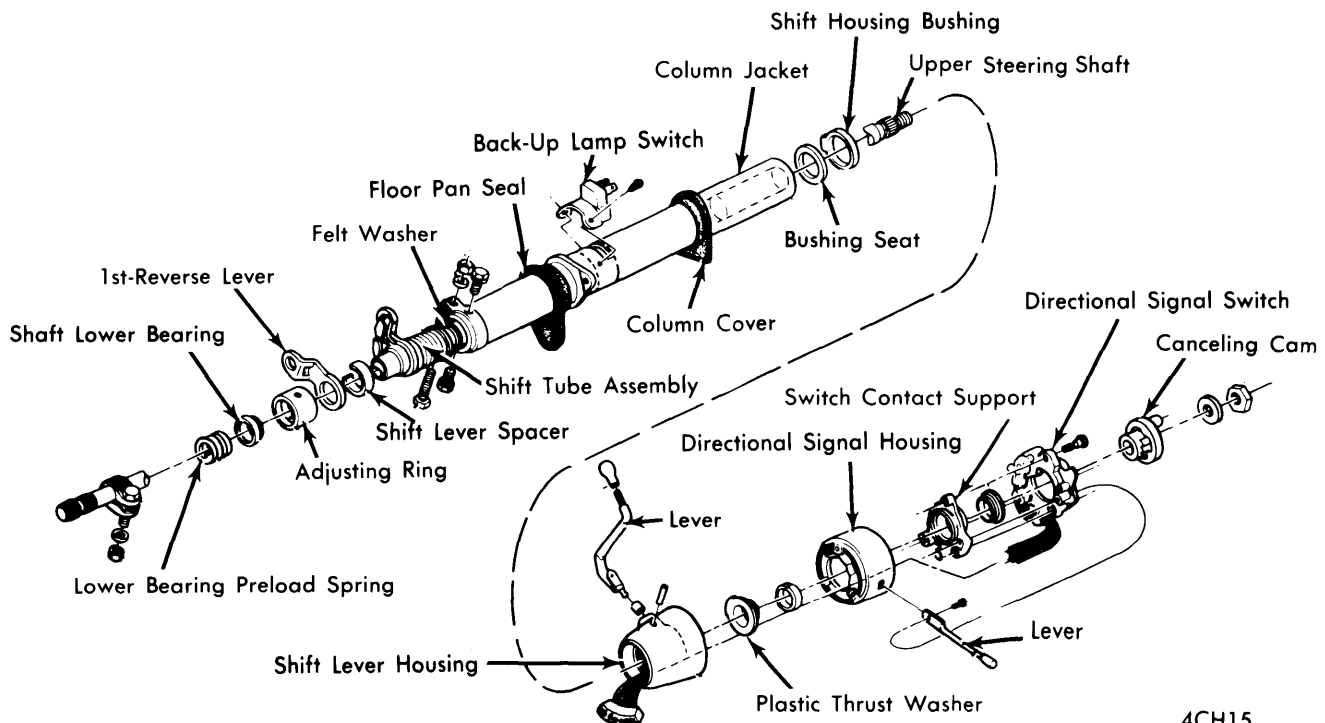
Disassembly - 1) Remove steering wheel nut and flat washer and then slide steering shaft assembly out of lower end of column. Remove lower bearing spring and clamp from steering shaft ("G" models) or from steering column ("P" models). Remove back-up lamp switch. Drive out shift lever pin, then remove shift lever.

2) Remove directional signal canceling cam and switch lever. Remove column wiring harness cover. Remove directional signal switch screws. Rotate directional signal switch housing counterclockwise and remove housing from column. *NOTE* - Housing and switch cannot be fully removed from column until shift lever housing is removed. Remove plastic thrust washer assembly and then remove shift lever housing (or extension housing if floor shift) from column.

3) Separate directional signal switch, switch control support assembly, directional signal housing and shift lever housing (or extension housing) assemblies. Press steering shaft upper bearing out of switch contact support. Remove shift lever housing (or extension housing) seat and bushing from upper end of column. Remove bolt and screws from adjusting ring clamp and remove clamp, adjusting ring, and lower bearing. Press lower bearing out of adjusting ring.

4) On three speed columns, remove 1st-Reverse shift lever and lever spacer. On automatic transmission columns, remove selector plate clamping ring screws. Place column upright on floor, supporting it with two pieces of wood. Place a block of wood on upper end of shift tube. Press down on shift lever with foot while tapping on wood block to withdraw tube from column jacket. If removal is difficult, use a suitable press.

5) Remove felt seal from shift tube. Remove firewall clamp, floor pan seal and dash seals from jacket. Inspect parts for excessive wear, rust or corrosion.



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"G" & "P" MODELS COLUMN ASSEMBLY MANUAL TRANSMISSION

GENERAL MOTORS (Cont.)

Reassembly — 1) When lubrication is called for, use lithium soap grease. Install floor pan seal, dash panel seal, and firewall clamps over end of column. Lubricate all bearing surfaces on shift tube. Place felt seal onto shift tube (next to spring) and place shift tube in jacket.

2) On three speed columns, temporarily install spacer, 1st-Reverse shift lever and lower adjusting ring. Place a block of wood on top of adjusting ring and tap until shift tube bottoms. Remove adjusting ring, shift lever, and spacer. Shift tube spring retainer must be bottomed against jacket stops. On automatic transmission columns, align three holes in selector plate with three holes in jacket. Position clamping ring and install three screws.

3) On three speed columns, lubricate and install spacer and 1st-Reverse lever (tang of lever towards top of column). On all columns, install lower bearing in adjusting ring, then install adjusting ring, clamp, and screws. Install shift lever housing (or extension housing) seat and bushing to upper end of housing.

4) Thread directional signal switch wiring harness through switch and shift lever (or extension) housings. Lubricate inner diameter of shift (extension) housing and install onto upper end of column. Install switch housing plastic washer assembly. Press upper bearing into switch contact support.

5) Install directional signal switch housing, contact support, bearing, and switch. Tighten screws. Install column wiring harness cover and back-up lamp switch. Install directional signal and gearshift levers.

6) On vehicles with column shift manual transmission, loosen adjusting ring attaching screws and clamp bolt. Rotate adjusting ring to give specified end play between adjusting ring and 1st-Reverse shift lever. Tighten attaching screws and clamp bolt. On vehicles with automatic transmission, place shift tube lever in "N" or "D". Loosen adjusting ring clamp screws and rotate adjusting ring to obtain specified clearance between shift tube lever and adjusting ring. Tighten adjusting ring clamp screws.

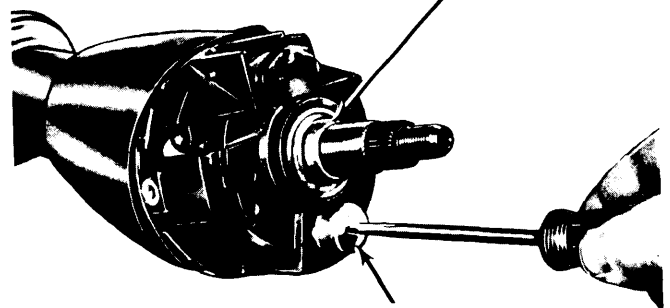
7) Loosely install lower bearing preload spring and clamp. Slide steering shaft assembly up through column assembly. Install directional signal canceling cam, steering shaft nut and lock washer.

ALL MODELS WITH TILT WHEEL

Disassembly — 1) Place column in vise using suitable holding fixture (J-22573). Remove directional signal switch. Remove lower steering shaft and pot joint assembly. Remove lower bearing and adapter assembly from column, then press bearing out from adapter. If column shift model, remove shift lever pivot pin and shift lever.

2) Install tilt release lever and place column in full up position. Remove tilt lever spring and retainer using a screwdriver that just fits into slot opening. Insert screwdriver into slot, push in approximately $\frac{3}{16}$ ", then rotate clockwise approximately $\frac{1}{8}$ turn until retainer ears align with grooves in housing and remove retainer and spring.

Steering Shaft Bearing Lock Nut

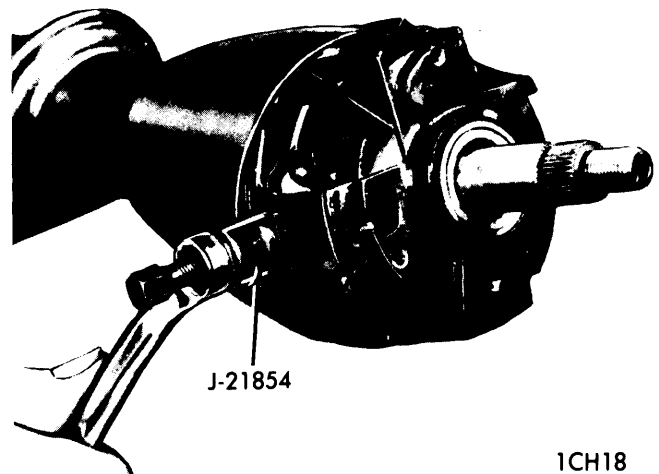


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Tilt Lever Spring Retainer

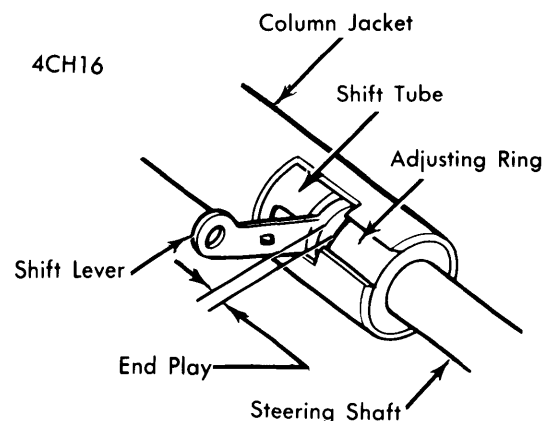
REMOVING TILT SPRING & RETAINER

3) Remove steering shaft bearing lock nut using suitable socket (J-22599). Remove upper bearing race seat and race. Remove two bearing housing pivot pins using suitable tool (J-21854).



J-21854

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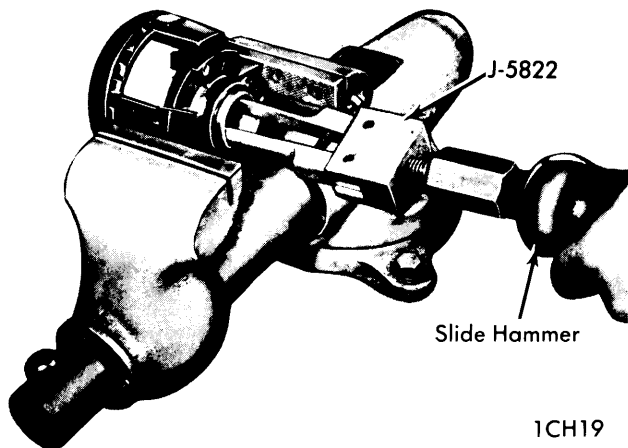
SHIFT TUBE ADJUSTMENT AUTOMATIC TRANSMISSION

REMOVING BEARING HOUSING PIVOT PIN

Steering Columns

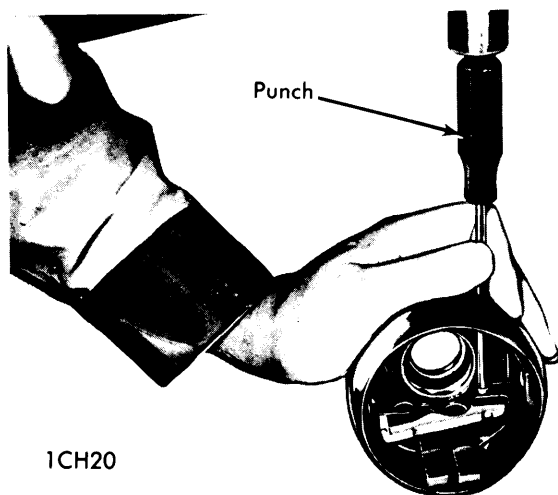
GENERAL MOTORS (Cont.)

4) Pull up on tilt release lever (to disengage lock shoes) and remove bearing housing. If it is necessary to disassemble bearing housing, proceed as follows: Press upper and lower bearings out of housing. Using suitable puller (J-5822) and slide hammer, pull bearing races from housing. Remove tilt release lever. Drive out shoe release lever pivot pin using a punch. Remove lever spring and remove wedge. Drive out lock shoe retaining pin with a punch and remove shoes and shoe springs.



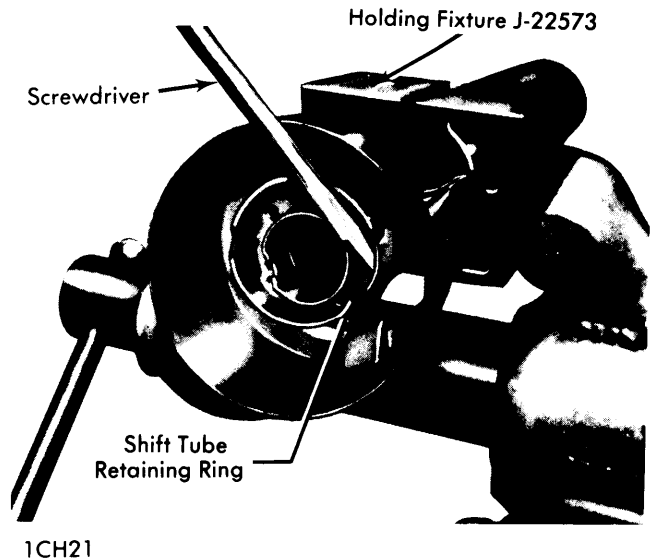
REMOVING BEARING RACE

5) Remove steering shaft assembly through upper end of column. If it is necessary to disassemble shaft assembly, proceed as follows: Turn upper shaft 90° to lower shaft and slide upper shaft and centering spheres from lower shaft. Rotate centering spheres 90° and remove centering spheres and preload spring from upper shaft.



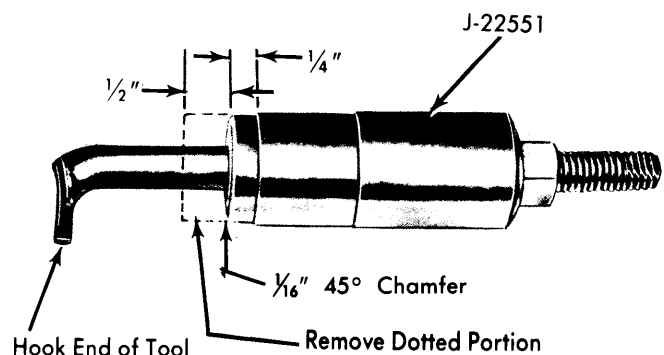
REMOVING RELEASE LEVER PIVOT PIN

6) Remove four bearing housing support screws and remove support. If shift tube index plate (column shift only) must be removed, remove two retaining screws and remove plate. Remove shift tube retaining ring with screwdriver. Remove thrust washer. Remove neutral start switch or back-up lamp switch retaining screws and remove switch.



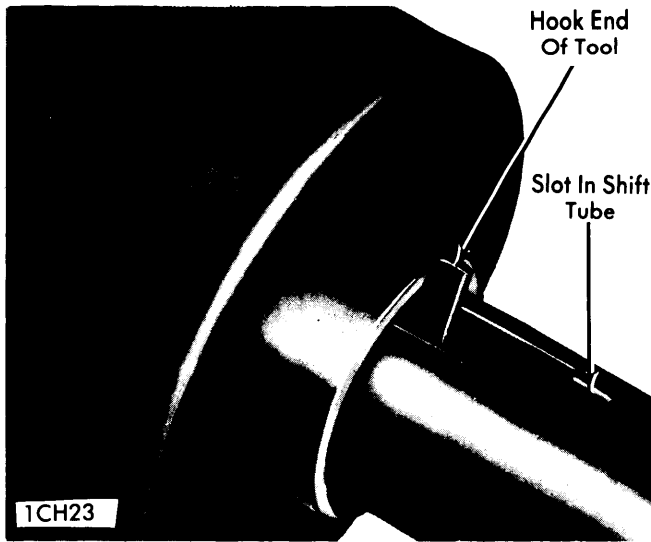
REMOVING SHIFT TUBE RETAINING RING

7) Rework suitable shift tube removing tool (J-22551) by removing 1/2" from pilot end of tool (see illustration). Remove shift tube assembly using reworked tool. Insert hooked end of tool into notch in shift tube just below shift lever housing key. Pilot sleeve over threaded end of tool and into upper end of shift tube. Force shift tube out of housing by turning nut onto the tool. If shift tube is not completely free when nut is bottomed on its threads, complete removal by hand. **CAUTION** - Do not hammer on shift tube during removal. On column shift models, guide lower shift lever through slotted opening in column to prevent damage to tube or column.



REWORKED SHIFT TUBE REMOVING TOOL

GENERAL MOTORS (Cont.)

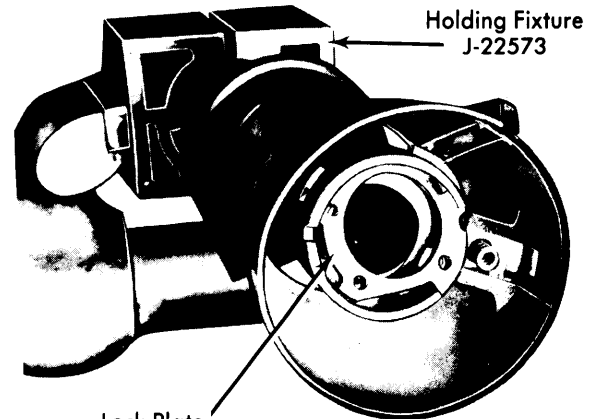


REMOVING SHIFT TUBE ASSEMBLY

8) Remove lock plate by sliding out of column notches, tipping plate downward toward housing (to compress wave washer), then removing as shown in illustration. Remove wave washer. On column shift models, remove shift lever housing and shift lever spring. Remove dash panel seal, mounting plate, and instrument panel seal from column jacket.

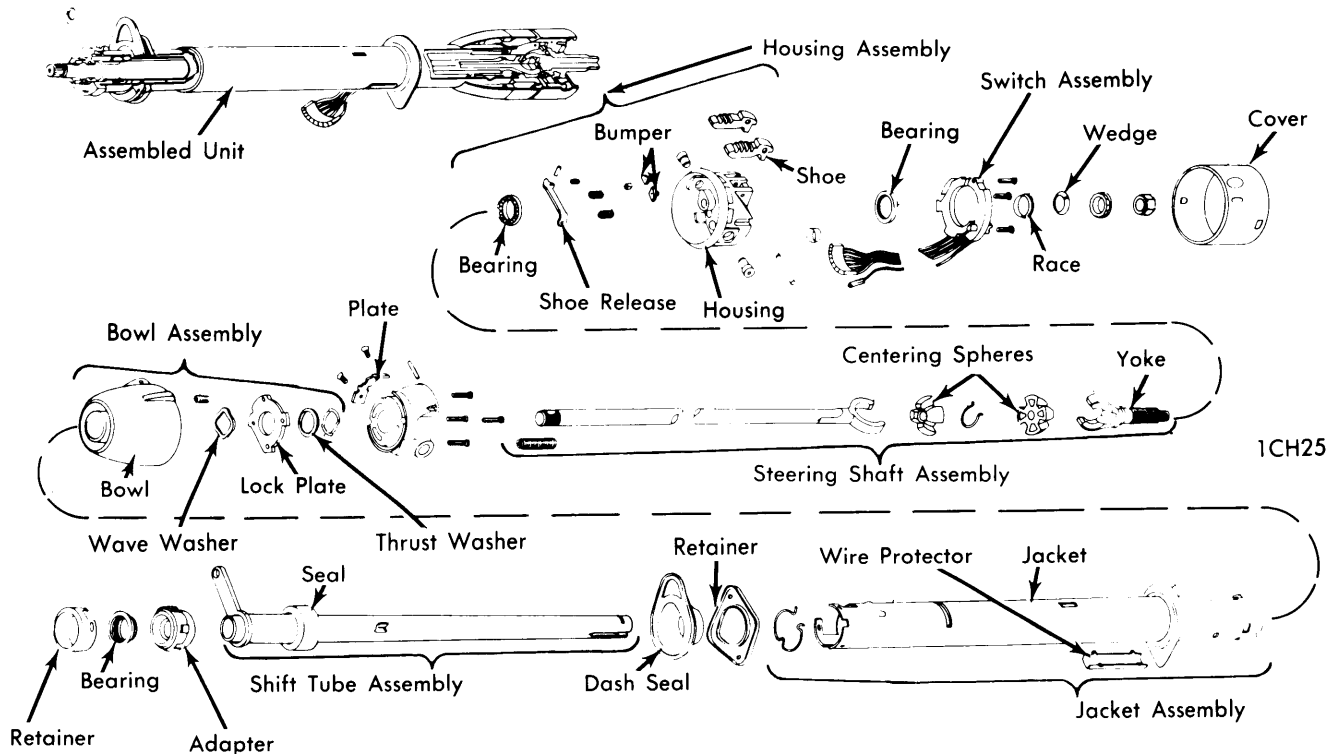
Reassembly - 1) When lubrication is called for, use lithium soap grease. Install dash panel seal, mounting plate and instrument panel seal on column. On column shift models, press a new shift lever spring into shift lever housing. Slide shift lever housing over upper end of column. Place wave washer and lock plate in position. Work lock plate into notches by tip-

ping plate toward housing (compressing wave washer) at open side of column. Lubricate lock plate and upper end of shift tube.



REMOVING LOCK PLATE

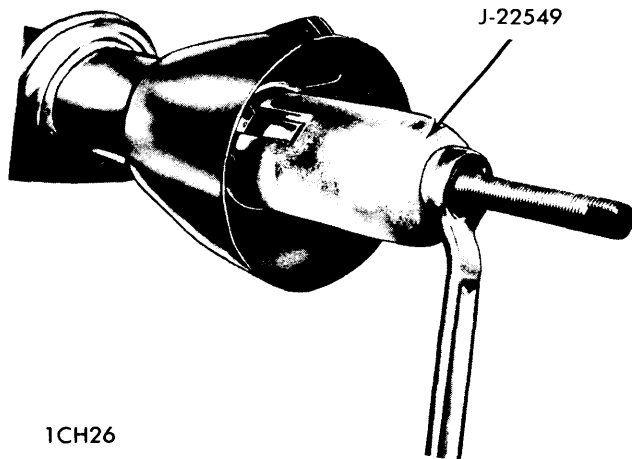
2) Carefully install shift tube into lower end of column (make sure foam seal is at lower end of shift tube). Align keyway in tube with key in shift lever housing and complete installation of shift tube using suitable installer tool (J-22549). Shift lever housing key must bottom in shift tube slot to be fully installed. Remove installer tool from column. Lubricate and push foam seal in flush with column housing. **CAUTION** - Do not hammer or force tube when installing in column.



TILT WHEEL STEERING COLUMN ASSEMBLY

Steering Columns

GENERAL MOTORS (Cont.)



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INSTALLING SHIFT TUBE

3) Pull up on shift lever housing (to compress wave washer) and install thrust washer and retaining ring. Be sure ring is seated in both slots of shift tube. Lubricate inside diameter of bearing housing support and install support, aligning bolt holes in support with bolt holes in lock plate. Install four support screws and tighten.

4) Assemble steering shaft as follows: Lubricate and assemble centering spheres and preload spring. Install spheres into upper (short) shaft and rotate 90°. Install lower 90° to upper shaft and over centering spheres. Slowly straighten shafts while compressing preload spring.

5) Install shaft assembly into housing from upper end. Install lower bearing and adapter, bearing reinforcement, wire clip, pot joint coupling and lower shaft as follows: Press new bearing into adapter and install lower bearing and adapter onto lower end of steering shaft. Place in position in lower end of column, aligning wide tab of adapter with open slot in column. Place lower bearing reinforcement over end of column (open position of reinforcement to open slot in column) and install clip. Make sure all three tabs of clip are fully engaged with slots in reinforcement and column.

6) Assemble bearing housing as follows: Press new upper and lower bearing races into bearing housing. Lubricate and install bearings into races. Place lock shoe springs in position in housing. Install each shoe in place and compress spring until a suitable size straight punch can be used to hold shoes in position. Once shoes are in place, install retaining pin. Install shoe release lever and drive in pivot pin. Install tilt release lever. Lubricate shoes and release lever.

7) Install bearing housing assembly to support. Hold tilt release lever up until shoes have fully engaged support. Lubricate and install bearing housing pivot pins. Press pins in flush with housing. Place housing in full "UP" position and then install tilt spring and retainer (tapered end of spring first). Push into housing approximately $\frac{3}{16}$ " and rotate counterclockwise $\frac{1}{8}$ turn.

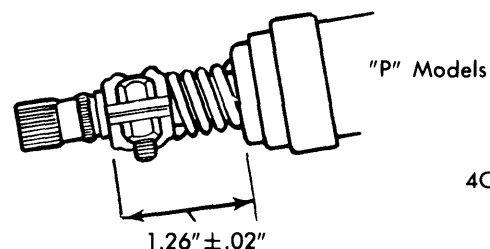
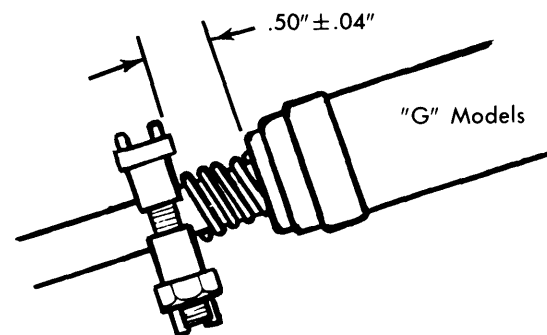
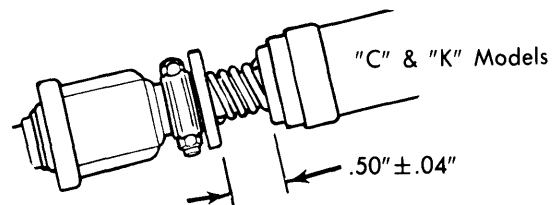
8) Lubricate and install upper bearing upper race, race seat and lock nut. Tighten lock nut to remove lash and then further tighten $\frac{1}{16}$ to $\frac{1}{8}$ turn (column must be in straight-ahead position). Remove tilt release lever.

9) Install directional signal switch. Install shift lever and pivot pin if column shift model. Install neutral-start or back-up lamp switch. Remove column from vise.

ADJUSTMENTS

COUPLING TO STEERING SHAFT FLANGE

Check dimension as shown in illustration for specific model. To adjust, apply force on steering wheel end of steering shaft while loosening shaft clamp on pot joint bolt. Tighten when specified dimension is obtained.



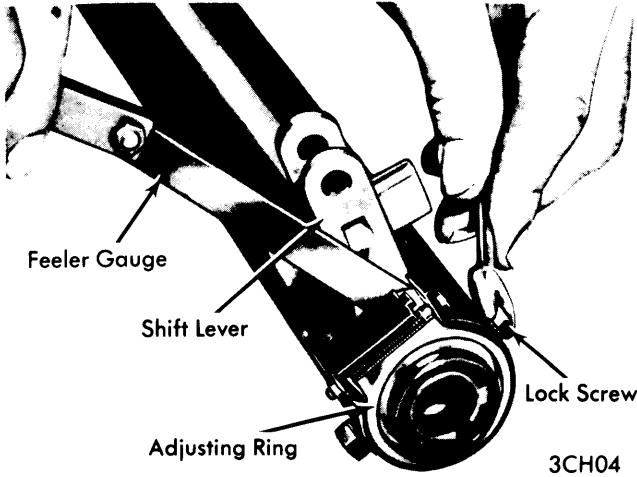
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COUPLING-TO-STEERING SHAFT FLANGE ADJUSTMENT

GENERAL MOTORS (Cont.)

LOWER BEARING ADJUSTMENT

Loosen lock screw. Insert specified feeler gauge (see Adjustment Specifications) between shift lever and adjusting ring. Rotate ring until slight drag is felt as feeler gauge is withdrawn. Without changing adjusting ring position, tighten lock screw.



**LOWER BEARING ADJUSTMENT (MAN. TRANS.)
(AUTO. TRANS. SIMILAR)**

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Flexible Coupling Bolt & Studs	
"P" Models.....	20
All Others	18
Lower Jacket Bearing Clamp	30
Lower Coupling-To-Wormshaft Clamp	
"P" Models.....	75
All Others	30
Application	INCH Lbs.
Column-To-Dash Panel.....	125
Floor Pan Cover Plate	
"P" Models.....	24
"G" Models.....	30
Firewall Bracket Clamp	
"G" Models.....	150
"P" Models.....	98
All Others	90
Lower Bearing Adjusting Ring Bolt	70
Ignition Switch Screws.....	35
Column Lock Plate Cover	20
Turn Signal Housing.....	45
Lock Bolt Spring Screw (Tilt Wheel)	35
Bearing Housing Support Screw (Tilt Wheel)	60

ADJUSTMENT SPECIFICATIONS

Application	Specification
Shift Lever-to-Adjusting Ring Clearance (Lower Bearing Adjustment)	
Manual Transmission005"
Automatic Transmission033-.036"
Coupling-to-Steering Shaft Flange	
"P" Models	1.26" ± .02"
All Other Models50" ± .02"