

Movable Steering Columns

GENERAL MOTORS TILT & TILT-TELESCOPE

DESCRIPTION

Two types of movable steering columns are used by General Motors. First type is the tilt steering column with six different steering wheel angle positions. The second type column tilts and also telescopes for driver ease of entry and comfort.

REMOVAL & INSTALLATION

The removal and installation procedures for tilt and tilt-telescope columns are the same as standard steering columns. See *General Motors Collapsible Steering Columns* in this section. **NOTE** — Removal is not necessary to service column upper end components.

DISASSEMBLY

NOTE — Once the steering column is removed from vehicle, it is extremely susceptible to damage. Dropping column on its end could collapse steering shaft or loosen plastic injections which maintain column rigidity. Leaning on mast jacket may cause jacket to bend or deform. When removing steering wheel, use a standard puller but do not hammer on puller to aid steering wheel removal as damage to column may result.

STEERING COLUMN

1) Disconnect battery ground cable and remove steering wheel. Remove column if necessary. Remove steering shaft lock cover. Install suitable tool (J-23653) on steering shaft and remove lock plate "C" ring. Remove lock plate, cancelling cam and upper bearing preload spring. Remove dimmer switch actuator arm (if equipped).

2) Unscrew hazard warning knob. Remove 3 switch mounting screws and pull the switch connector out of bracket on column

jacket. Feed connector through column support bracket and pull switch straight up. Remove wire harness protector with pliers. Pull switch straight up, guiding wire harness and cover through column housing.

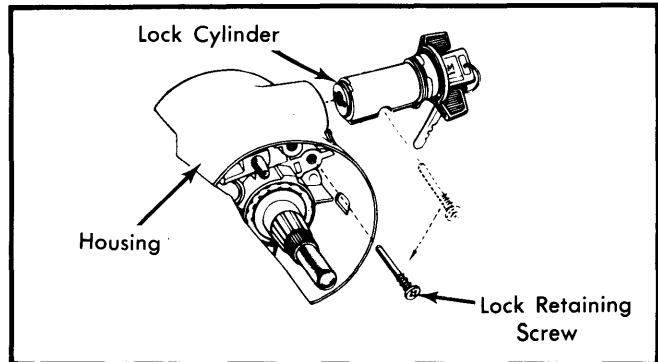


Fig. 1 Ignition Lock Cylinder Removal

3) Turn ignition switch to "RUN" position, remove key warning buzzer switch retainer clips and buzzer switch. DO NOT drop buzzer retainer clip into column. Remove screw securing lock cylinder and remove lock cylinder by pulling it out. Remove tilt lever and cover-to-housing screws. If equipped with dimmer on column, remove cap and actuator rod. Use punch to remove pivot pin, then lift out pivot assembly.

4) Remove wiper switch, if equipped. Remove lock spring screw, then move rack assembly upward. Turn spring clockwise until disconnected from steering shaft lock bolt, and remove spring. Remove sector snap ring and remove sector with a pin punch by driving out cylinder lock shaft. Lock bolt can now be removed from housing. Remove lock drive shaft through lock

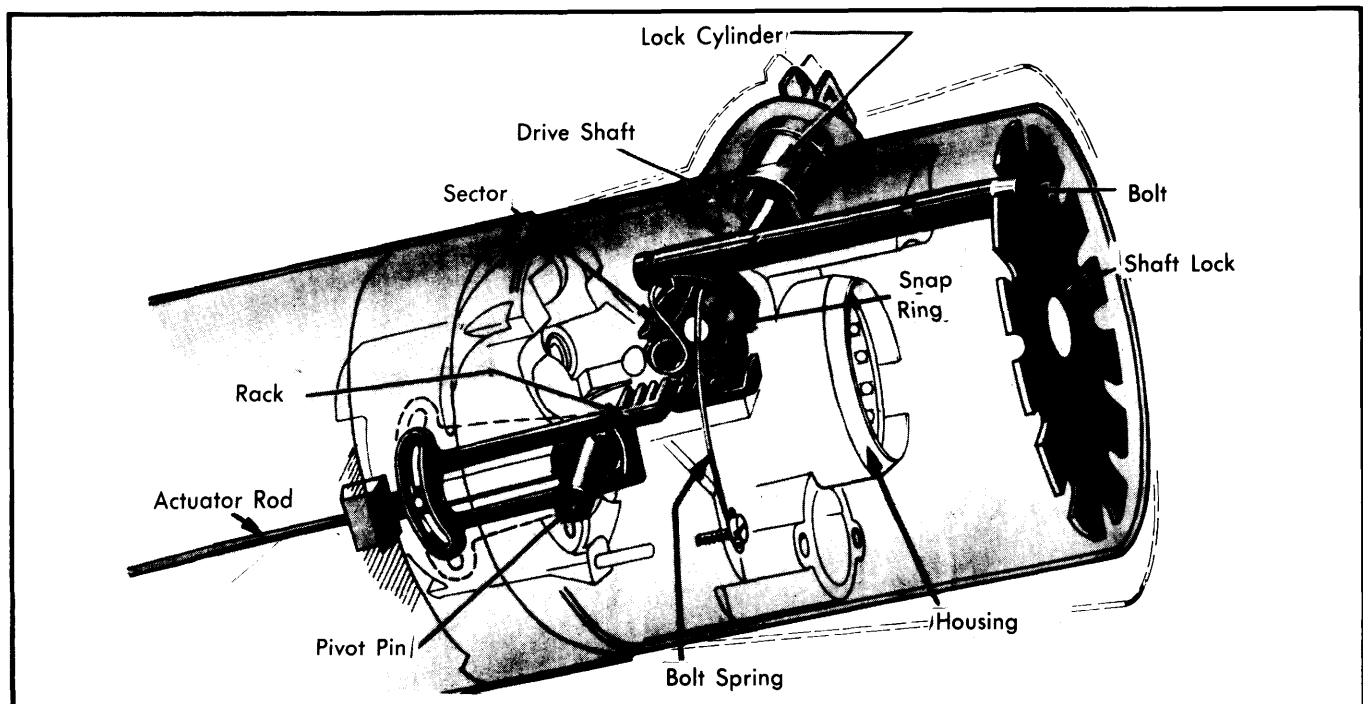


Fig. 2 Steering Locking Mechanism (Locked Position)

Movable Steering Columns

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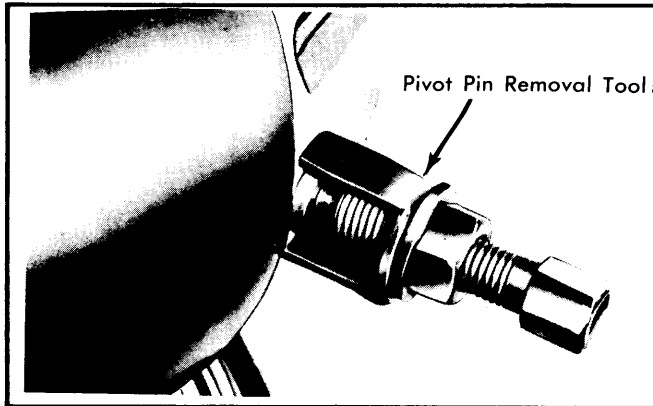


Fig. 5 Removing Pivot Pins

6) With telescoping type columns, remove upper shaft from upper yoke by releasing locking rod and pulling shaft out. Remove locking wedge and rod. With all columns, to remove complete steering shaft assembly, disconnect and remove lower shaft coupling, bearing components and spacer (if equipped). Carefully pull steering shaft from column upper end. **NOTE** — If service is required on yoke or centering sphere assembly only, it is not necessary to remove steering shaft completely from column. To disconnect steering shaft spheres, turn yoke 90° to centerline of lower shaft, align flats on centering sphere with lower shaft and remove upper yoke with centering sphere. Remove sphere from yoke by rotating sphere so flats align with yoke opening.

7) Remove shift lever by driving out pin and pulling lever from bowl. Remove four screws attaching support to lock plate and remove support. Remove shift gate attaching screws and remove shift gate from support. Remove ignition switch as follows: Remove toe-pan trim cover and loosen toe-pan clamp bolts. Remove nuts from column bracket and lower column. Place the ignition key lock cylinder in "LOCK" position before proceeding. **NOTE** — If lock cylinder has already been removed, the actuating rod to ignition switch should be pulled up until it stops and then pushed down one detent, which is "LOCK" position. Remove switch screws and remove ignition switch. Remove actuator rod through bowl from upper end of column.

8) The following steps for bowl and/or shift tube removal require column removal. With column removed from vehicle, remove ignition switch, neutral start and back-up switch (if equipped). Remove retaining ring, cover, bearing and adapter from column lower end. Remove shift tube retaining ring and thrust washer. Remove lower shift tube support screws (if equipped).

9) Position suitable puller (J-23072) in bowl and turn bolts into lock plate about six turns. Turn center tool bolt while guiding shift lever through slot in jacket. Separate shift tube and bowl. Mark location of lock plate and remove lock plate and wave washer. Slide shift tube out column lower end.

REASSEMBLY

CAUTION — Components and fasteners used in steering column design are important in that they can affect vehicle safety and the performance of vital systems if not serviced properly. All replacement parts must be of equal part number or equivalent quality. DO NOT use a part of lesser quality or substitute design.

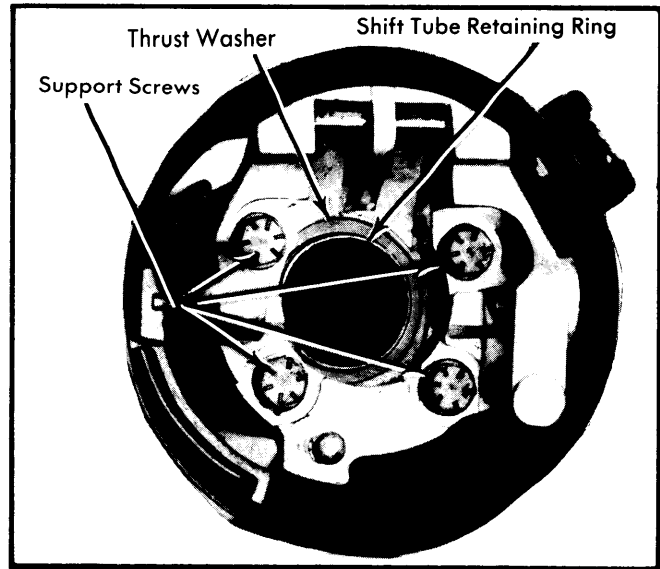


Fig. 6 Support & Shift Tube Mounting

STEERING COLUMN

1) Mount column in a suitable holding fixture or clamp onto two weld nuts with a vise. During reassembly, apply a thin coat of lithium grease to all friction parts. Install shift lever spring into housing if equipped. With floor shift models, install plunger. With tilt only columns, slide the gearshift lever housing onto mast jacket. With tilt-telescoping columns, install transmission control lock tube housing extension and tighten screws. Install housing cover so the three cover tabs enter slots in housing extension. Install housing onto mast jacket assembly. **NOTE** — Do not hammer on end of shift tube.

2) Install bearing support lock plate wave washer. Install bearing support lock plate sliding it under jacket opening. Slide lock plate into notches in jacket. Insert shift tube into lower end of mast jacket. Align keyway in tube with key in shift lever housing. Insert suitable shift tube installer tool (J-23073) in shift tube and turn tool to tighten swivel (see illustration). With tool installed as shown, turn nut on tool while guiding shift lever through jacket slot, and pull shift tube into housing. Remove tool.

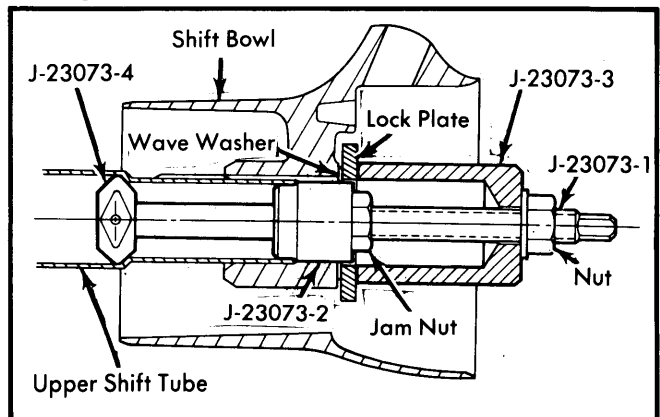


Fig. 7 Shift Tube Installer Tool

3) Install bearing support thrust washer and retaining ring by pulling shift lever housing up far enough to compress wave washer. Install bearing support by aligning "V" in support with "V" in jacket. Install and tighten screws. **NOTE** — With

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telescope columns, install actuator rod before tightening support screws. Install lower bearing adapter, bearing, bearing reinforcement, jacket and adapter. Install centering spheres and anti-lash spring. With telescope columns, install upper shaft, locking wedge, locking rod and bumper in upper yoke. Install steering shaft assembly in shift tube from upper end carefully guiding shaft through tube and bearing. With tilt only columns, install actuator rod through shift lever housing and insert in slot in bearing support.

4) If bearing housing was disassembled, proceed as follows: Press bearings into housing. Install lock shoe springs, lock shoes and shoe pin in housing. **NOTE** — With tilt lever opening on left side, shoes facing up, the four slot shoe is on left. Use a .180" rod to line up shoes for pin installation. Install shoe release lever, spring and pin. **NOTE** — To reduce load on release lever, hold shoes inward and wedge a block between top of shoes and bearing housing. Install sector drive shaft and lightly tap sector onto shaft and install snap ring. Install lock bolt and engage with sector cam surface. Install rack and spring. Block tooth on rack should engage same on sector. Install external tilt release lever. Install lock bolt spring and tighten screw.

5) Extend rack downward from housing and assemble housing over steering shaft. Engage rack over end of actuator rod. With tilt release lever, hold lock shoes in the disengaged position and position housing over shaft so pivot pin holes line up. Install pivot pins using a brass drift. Place housing in full up position and install tilt spring guide, spring and retainer. Install upper bearing inner race and race seat. Install tilt and turn signal lever opening shields as equipped. Remove tilt release lever and install turn signal housing. Install tilt release lever and shift lever.

6) Install 3 screws securing cover to housing assembly. Position wedge spring on buzzer switch, push switch and spring into hole in housing with switch contacts pointing up. Position turn signal switch in neutral position and install 3 screws.

7) Install hazard warning flasher button and check operation. Assemble ignition switch on actuator rod and adjust. Align key cylinder lock with keyway in housing and push lock all the way in. Install retaining screw and tighten. To complete reassembly, reverse disassembly procedure.

NOTE— All friction parts EXCEPT ignition lock assembly are to be lubricated with a light coat of lithium grease.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Steering Wheel Nut	30-35
Bracket-to-Column Bolts	15-30
Bracket-to-Instrument Panel Stud Nuts	①15-25
Clamp-to-Steering Shaft Nut	50-55
Flex Coupling Nuts	20
Flex Coupling-to-Shaft Bolt	30

① — Do not exceed 25 ft. lbs. to prevent crushing capsules.

Application	INCH Lbs.
Turn Signal Switch Screws	25-35
Ignition Switch Screws	35
Housing Cover Screws	100
Support-to-Lock Plate Screws	60
Shaft Lock Cover Screws	15
Shift Gate Screws	45
Lock Bolt Spring Screw	35
Tilt Release Lever	30
Trans. Control Lock Tube Housing Extension Screw	
Corvette	40