

# SECTION 11-04 Steering Column

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## VEHICLE APPLICATION

Taurus/Sable.

## DESCRIPTION

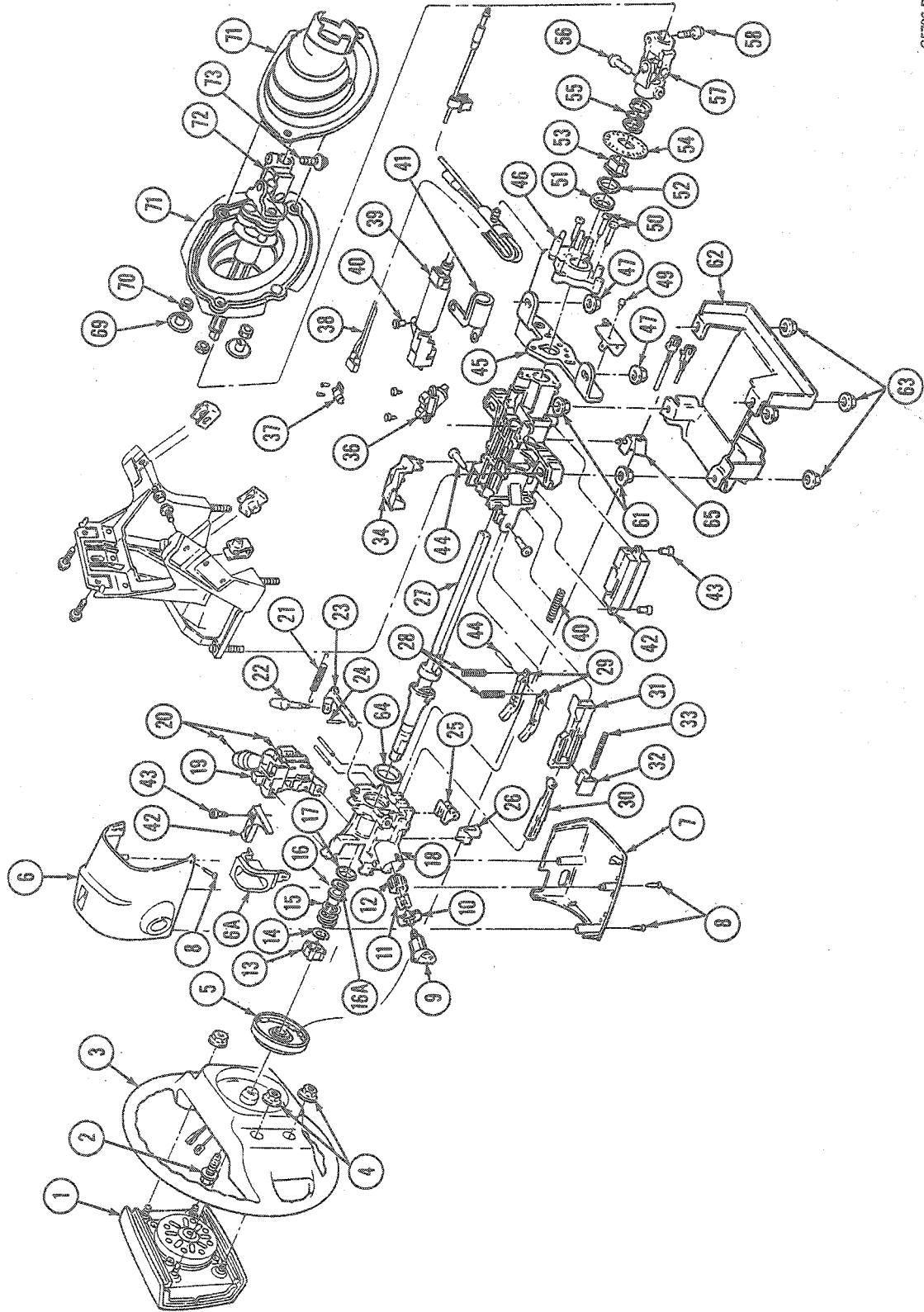
**NOTE:** All fasteners are important in that they could affect the performance of vital parts and systems, and/or could result in major service expenses. They must be replaced with fasteners of the same part number if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during assembly to ensure proper functioning of these parts.

The steering column has been redesigned for more efficient use of package space and improved strength. The structural part of the column is made of magnesium die castings. The column is attached to a support that is an integral part of the instrument panel. The column lower attachments are through a bracket that bends during column collapse. The upper attachments are through plastic shear modules that separate from the main casting during column collapse. A clip and washer are attached to the shear modules to reduce column shake and to assist in column installation to the beam.

A unique shifter mechanism has been installed on the column (column shift only). It has the insert plate located away from the shift lever and interacts with the shift lever through a linkage system. This system provides a positive interlock with no adjustments required.

DESCRIPTION (Continued)

Steering Column, Console Shift—Exploded View



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## DESCRIPTION (Continued)

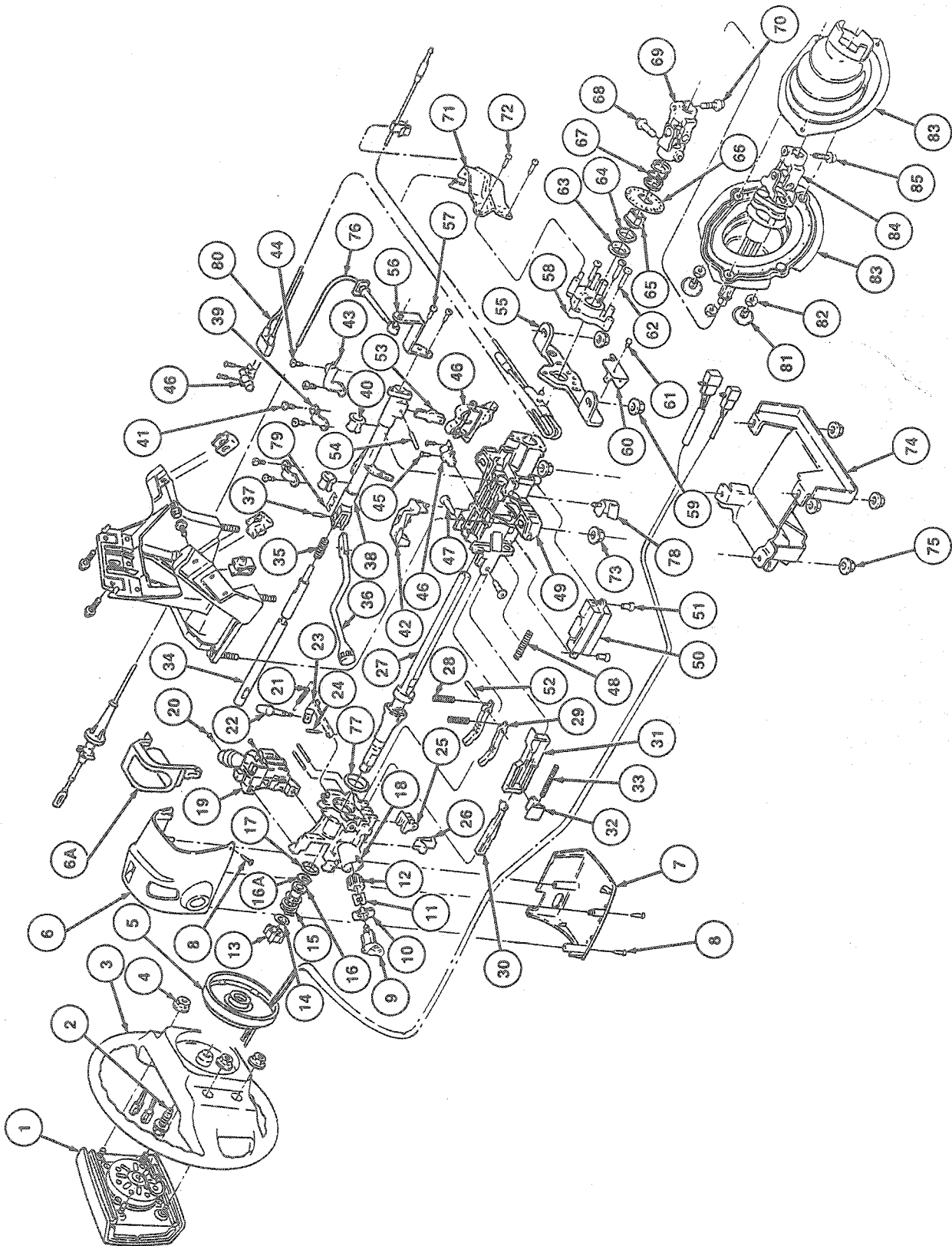
Item	Part Number	Description
1	—	Air Bag Module
2	N804385-S100	Steering Wheel Bolt
3	—	Steering Wheel
4	—	Air Bag Module Retaining Nuts
5	14A664	Air Bag Clockspring Contact Assy
6	3530	Upper Column Shroud
6A	3D677	Seal Assy
7	3533	Lower Column Shroud
8	55929	Shroud Retaining Screws
9	11572	Ignition Lock Cylinder Assy
10	3F579	Retainer
11	3E700	Bearing
12	3E717	Gear — Steering Lock
13	13318	Turn Signal Cancelling Cam
14	3C610	Snap Ring
15	3520	Spring — Upper Bearing
16	3518	Sleeve
16A	3L539	Ring
17	3517	Bearing — Upper (Small)
18	3F642	Lock Cylinder Housing
19	13K359	Multi-Function Switch
20	390345-S36	Screws
21	—	Spring
22	3F527	Tilt Release Lever
23	3D544	Tilt Actuator Lever
24	3F530	Tilt Actuator Lever Pin
25	3E695	Cam Steering Column Lock
26	14A163	Clip Wiring — Upper
27	3D657	Steering Shaft Assy
28	3C732	Spring Lock Lever
29	3B662 (RH) 3D653 (LH)	Lever Steering Column Lock
30	3E723	Lock Actuator Assy — Upper
31	3E715	Lock Actuator Assy — Lower
32	3E691	Pawl — Steering Column Lock (Shaft)
33	3E696	Spring — Steering Column Lock (Shaft)
34	14A099	Shield

(Continued)

Item	Part Number	Description
36	—	Solenoid and Bracket
37	2B623	Release Switch
38	2B654	Hose
39	3F719	Shift Interlock Cable
40	N806038	Screw
41	7H178	Bracket
42	3F527	Lever Assy
43	3F530	Pin
44	N805865	Tilt Pivot Screws
45	3D655	Spring — Steering Column Position Lock
46	3F723	Actuator Housing
47	—	Ignition Switch
48	N805858	Screws
49	3F530	Pin — Pivot Lever
50	3B632	Lower Column Bracket
51	3E738	Lower Bearing Housing Retainer
52	N801555	Lower Column Mounting Nuts
53	14A206	Bracket
54	N804409	Screw
55	805859	Lower Bearing Housing Retaining Screws
56	3A649	Lower Column Bearing Sleeve
57	3517	Lower Column Bearing
58	36539	Tolerance Ring — Lower
59	3C131	Sensor Ring
60	3C674	Spring
61	N803942	Bolt — Flange Yoke
62	3N725	Steering Shaft U — Joint Assy
63	N803942	Bolt
64	N801555	Upper Column Mounting Nuts
65	3E645	Absorber — Steering Column Impact
66	N801555	Nuts
67	3517	Bearing — Upper (Large)
68	14A163	Clip Wiring — Lower
69	N804326	Nut (2 Req'd)
70	N620012	Nut (3 Req'd)
71	3E735	Boot Assy
72	3C662	Intermediate Shaft Assy
73	N806393-S100	Bolt

DESCRIPTION (Continued)

Steering Column, Column Shift—Exploded View



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## DESCRIPTION (Continued)

Item	Part Number	Description
1	—	Air Bag Module
2	N804385-S100	Steering Wheel Bolt
3	—	Steering Wheel
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5	14A664	Air Bag Clockspring Contact Assy
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8	55929	Shroud Retaining Screws
9	11572	Ignition Lock Cylinder Assy
10	3F579	Retainer
11	3E700	Bearing
12	3E717	Gear — Steering Lock
13	13318	Turn Signal Cancelling Cam
14	3C610	Snap Ring
15	3520	Spring — Upper Bearing
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16A	3L539	Ring
17	3517	Bearing — Upper (Small)
18	3F642	Lock Cylinder Housing
19	13K359	Multi — Function Switch
20	390345-S36	Screws
21	—	Spring
22	3F527	Tilt Release Lever
23	3D544	Tilt Actuator Lever
24	3F530	Tilt Actuator Lever Pin
25	3E695	Cam Steering Column Lock
26	14A163	Clip Wiring — Upper
27	3D657	Steering Shaft Assy
28	3C732	Spring Lock Lever
29	3B662 (RH) 3D653 (LH)	Lever Steering Column Lock
30	3E723	Lock Actuator Assy — Upper
31	3E715	Lock Actuator Assy — Lower
32	3E691	Pawl — Steering Column Lock (Shaft)
33	3E696	Spring — Steering Column Lock (Shaft)
34	7361	Plunger Trans Control Select
35	7B071	Spring — Trans Control Selector Return
36	7302	Shift Lever
37	7W441	Shift Lever Pin
38	7215	Trans Selector Control Tube
39	7E400	Trans Gear Shift Tube Clamps
40	7335	Bushings
41	N805858	Screws
42	14A099	Shield

(Continued)

Item	Part Number	Description
43	7A216	Trans Control Selector Position Insert
44	N805858	Screws
45	390345-S36	Screws
46	2B623	Parking Brake Vacuum Release Switch
47	N805865	Tilt Pivot Screws
48	3D655	Spring — Steering Column Position Lock
49	3F723	Actuator Housing
50	—	Ignition Switch
51	N805858	Screws
52	3F530	Pin — Pivot Lever
53	3E691	Pawl Steering Column Lock Shifter
54	3B663	Pin — Steering Column Lock Shifter
55	3B632	Lower Column Bracket
56	7D282	Trans Control Selector Lower Lever
57	805858	Screws
58	3E738	Lower Bearing Housing Retainer
59	N801555	Lower Column Mounting Nuts
60	14A206	Bracket
61	N804409	Screw
62	805859	Lower Bearing Housing Retaining Screws
63	3A649	Lower Column Bearing Sleeve
64	3517	Lower Column Bearing
65	3L539	Tolerance Ring — Lower
66	3C131	Sensor Ring
67	3C674	Spring
68	N803942	Bolt — Flange Yoke
69	3N725	Steering Shaft U — Joint Assy
70	N803942	Bolt
71	7E364	Shift Cable Bracket
72	805858	Shift Cable Bracket Mounting Screws
73	N806423-S56	Upper Column Mounting Nuts
74	3E645	Absorber — Steering Column Impact
75	N801555	Nuts
76	7E395	Shift Cable Assy
77	3517	Bearing — Upper (Large)
78	14A163	Clip Wiring — Lower
79	7C464	Clip
80	2B654	Hose
81	N804326	Nut (2 Req'd)
82	N620012	Nut (3 Req'd)
83	3E735	Boot Assy
84	3C562	Intermediate Shaft
85	N806393-S100	Bolt

TG5794D

**DIAGNOSIS AND TESTING**

**Ignition Switch Electrical Diagnosis**

Refer to Section 11-05 for Blade Terminal-Type Connector Switch—Mechanical Test.

Refer to the following chart for ignition switch diagnosis.

**IGNITION SWITCH MECHANICAL DIAGNOSIS**

CONDITION	POSSIBLE SOURCE	ACTION
<ul style="list-style-type: none"> <li>● High Key Efforts</li> </ul>	<ul style="list-style-type: none"> <li>● Damaged lock cylinder.</li> <li>● Shrouds mis-aligned.</li> <li>● Casting/actuator binds, sticks, grabs, with key rotation.</li> <li>● Damaged ignition switch.</li> </ul>	<ul style="list-style-type: none"> <li>● Lubricate cylinder and check for burrs on key and/or correct key cut. If effort is still excessive, replace lock cylinder.</li> <li>● Align shroud to fit properly.</li> <li>● If improper fit between casting and actuator exists, replace parts.</li> <li>● If burrs are found on actuator surfaces which contact the casting during key travel, gently file these surfaces until smooth. At no time attempt to file teeth of actuator.</li> <li>● If serious burrs are found on casting surface which contact actuator during key travel, replace the casting.</li> <li>● If actuator teeth show excessive wear or are burred, replace actuator.</li> <li>● Assemble lock housing assembly taking care to thoroughly lube all internal components with Multi-Purpose Grease DOAZ-19584-AA (ESR-M1C159-A, ESB-M1C93-A) or equivalent and check key efforts. If still high, replace lock housing assembly.</li> <li>● Replace the ignition switch.</li> </ul>

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**Steering Column**

Refer to the following charts for steering column diagnosis procedures.

**STEERING COLUMN DIAGNOSIS**

CONDITION	POSSIBLE SOURCE	ACTION
<ul style="list-style-type: none"> <li>● Squeak, Moan When Steering Wheel Turned</li> </ul>	<ul style="list-style-type: none"> <li>● Gear rolled up or down allowing input shaft or pinch bolt to contact boot.</li> </ul>	<ul style="list-style-type: none"> <li>● Reposition rack and pinion to proper position and/or reposition boot.</li> </ul>
<ul style="list-style-type: none"> <li>● Engine Compartment Noise, Fumes, Heat, Vapors and/or Water and Liquids Enter Passenger Compartment</li> </ul>	<ul style="list-style-type: none"> <li>● Seal distorted leaving gap to lower shaft.</li> <li>● Seal missing.</li> <li>● Boot retaining nuts missing.</li> <li>● Boot mispositioned.</li> <li>● Dash absorber under boot sealing surface.</li> <li>● Dash panel surface deformed.</li> <li>● Boot missing.</li> <li>● Boot cut or torn.</li> <li>● Improper assembly of power steering isolator plastic sleeve.</li> </ul>	<ul style="list-style-type: none"> <li>● Replace boots with visual gaps. Realign gear and/or boot to specifications. If condition isn't resolved, replace boot.</li> <li>● Replace boot.</li> <li>● Install nuts.</li> <li>● Reposition boot.</li> <li>● Reposition absorber under gap-hinder lip.</li> <li>● Replace rope caulk on sealing surface of boot.</li> <li>● Install new boot.</li> <li>● Install new boot.</li> <li>● Replace boot.</li> </ul>

## DIAGNOSIS AND TESTING (Continued)

## STEERING COLUMN DIAGNOSIS (Continued)

CONDITION	POSSIBLE SOURCE	ACTION
<ul style="list-style-type: none"> <li>● Rubbing Noise</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Intermediate Shaft Area</b></li> <li>● Boot mispositioned on intermediate shaft.</li> <li>● U-joint bearings damaged or contaminated.</li> <li>● <b>Lower Column Area</b></li> <li>● Damaged, fractured bearing or retainer.</li> <li>● <b>Upper Column Area</b></li> <li>● Wheel rubbing on shroud.</li> <li>● Damaged upper bearing sleeve, lock housing or retainer.</li> <li>● Damaged bearing.</li> </ul>	<ul style="list-style-type: none"> <li>● Install properly.</li> <li>● Replace intermediate shaft.</li> <li>● Replace bearing and retainer.</li> <li>● Install shroud to proper location.</li> <li>● Remove shroud and check for proper installation of lock housing, upper bearing and upper bearing snap ring. Install as required.</li> <li>● Replace bearing.</li> <li>● Replace shaft, lock housing or outer tube.</li> </ul>
<ul style="list-style-type: none"> <li>● Clunk During Acceleration or Deceleration</li> </ul>	<ul style="list-style-type: none"> <li>● Loose intermediate shaft to gear.</li> </ul>	<ul style="list-style-type: none"> <li>● Tighten retaining bolts.</li> </ul>
<ul style="list-style-type: none"> <li>● Rattles, Loose Steering</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Intermediate Shaft Area</b></li> <li>● Intermediate shaft to gear attachment not tight.</li> <li>● Improper boot assembly.</li> <li>● Interference fit between plastic collar and intermediate shaft.</li> <li>● Excessive universal joint lash.</li> <li>● Power steering isolator rubber bond separation.</li> <li>● <b>Lower Column Area</b></li> <li>● Loose intermediate shaft to column or column to support attachment.</li> <li>● <b>Upper Column Area</b></li> <li>● Improper shroud assembly.</li> <li>● Column to support bracket loose.</li> <li>● Loose shaft to upper bearing.</li> <li>● Lock housing assembly.</li> </ul>	<ul style="list-style-type: none"> <li>● Tighten attachments.</li> <li>● Install and tighten screws.</li> <li>● Install to proper location. Replace if necessary.</li> <li>● Replace intermediate shaft.</li> <li>● Replace intermediate shaft.</li> <li>● Tighten attachments.</li> <li>● Install and tighten shroud.</li> <li>● Tighten attachment.</li> <li>● Check that snap ring is engaged to shaft properly. Replace bearing or shaft.</li> <li>● Replace parts as required.</li> </ul>
<ul style="list-style-type: none"> <li>● Binding/Heavy Effort/ No Returnability/ Column Grounded/ Sticks/Binds/Grabs</li> </ul>	<ul style="list-style-type: none"> <li>● Improper installation of dash boot.</li> <li>● Improperly assembled universal joint.</li> <li>● Upper column.</li> <li>● Restrictor assembly on sensor ring not removed (during assembly).</li> </ul>	<ul style="list-style-type: none"> <li>● Reposition boot.</li> <li>● Replace intermediate shaft.</li> <li>● Remove column and check column for binding while disconnected from intermediate shaft. If it binds: <ul style="list-style-type: none"> <li>A. Remove column shaft and check it for straightness — replace shaft.</li> <li>B. Check upper and lower bearing for ease of rotation — replace.</li> <li>C. Check for contact of shaft to other components — replace parts required.</li> </ul> </li> <li>● Replace sensor ring and bearing wedge. <b>DO NOT</b> install restrictor.</li> </ul>

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## REMOVAL AND INSTALLATION

**CAUTION:** Do not remove the steering column, steering wheel and air bag module as an assembly from the vehicle unless the column is locked to prevent rotation, or lower end of steering shaft should be wired in such a way to prevent the steering wheel from being rotated.

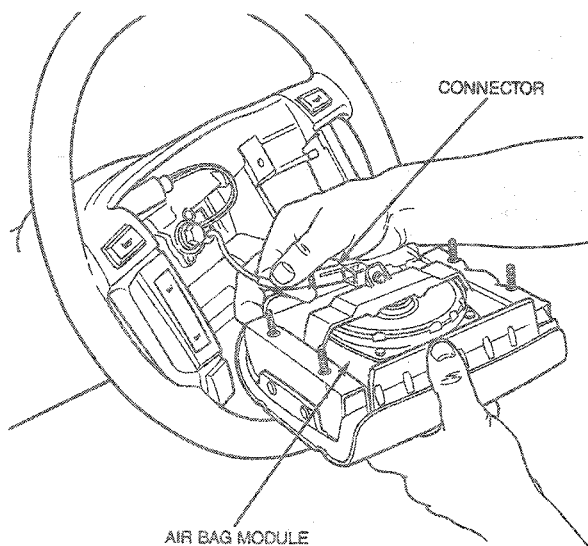
### Steering Wheel

#### Tools Required:

- Steering Wheel Puller T67L-3600-A

#### Removal

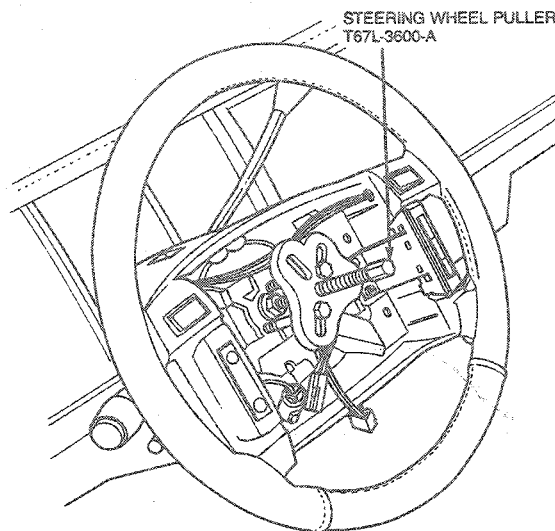
- Center front wheels to the straight-ahead position.  
**WARNING: THE BACKUP POWER SUPPLY MUST BE DISCONNECTED BEFORE ANY AIR BAG COMPONENT IS SERVICED.**
- Disconnect battery ground cable and air bag backup power supply. Refer to Section 01-20B.  
**NOTE:** Taurus SHO only, remove two steering wheel back cover plugs. Remove two air bag module retaining bolts and lift module off steering wheel.
- Remove four air bag module retaining nuts and lift module off steering wheel.
- Disconnect air bag wire harness from air bag module and remove module from wheel.



G5763-A

- Disconnect speed control wire harness from steering wheel.  
**CAUTION:** Be sure contact assembly wire harness does not get caught on wheel assembly when lifting off shaft.
- Remove and discard steering wheel retaining bolt.

- Install Steering Wheel Puller T67L-3600-A or equivalent and remove steering wheel. Route contact assembly wire harness through steering wheel as wheel is lifted off shaft.



G5564-A

#### Installation

- Ensure that vehicle's front wheels are in the straight-ahead position.
- Route contact assembly wire harness through steering wheel opening at the three o'clock position and position steering wheel on steering shaft. The steering wheel and shaft alignment marks should be aligned. Be sure air bag contact wire is not pinched.
- Install new steering wheel retaining bolt and tighten to 31-45 N·m (23-33 lb-ft).  
**CAUTION:** Be sure wiring does not get trapped between steering wheel and contact assembly.
- Connect speed control wire harness to wheel and snap connector assembly into steering wheel clip.
- Connect air bag wire harness to air bag module and install module to steering wheel. Tighten module retaining nuts to 4-5.4 N·m (36-47 lb-in). (Taurus SHO: Tighten retaining screws to 10.2-13.8 N·m (7.5-10 lb-ft.) Install back cover plugs.)
- Connect air bag backup power supply and battery ground cable. Verify air bag warning indicator.

### Tilt Lock Lever

#### Removal and Installation

- To remove tilt lock lever, rotate lever counterclockwise.



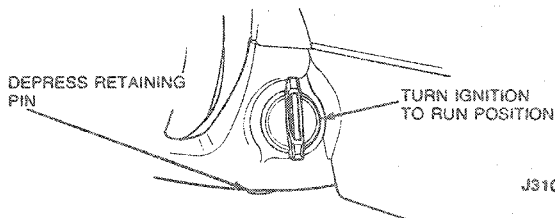
**REMOVAL AND INSTALLATION (Continued)**

- To install, position lever and rotate clockwise until tight.

**Ignition Lock Cylinder Assembly****Functional Lock****Removal**

The following procedure applies to vehicles that have functional lock cylinders. Lock cylinder keys are available for these vehicles, or the lock cylinder key numbers are known and the proper key can be made.

- Disconnect battery ground cable.
- Turn lock cylinder key to RUN position.
- Place a 3.17mm (1/8 inch) diameter wire pin or small drift punch in hole in trim shroud under lock cylinder. Depress retaining pin while pulling out on lock cylinder to remove it from column housing.

**Installation**

- Install lock cylinder by turning it to RUN position and depressing retaining pin. Insert lock cylinder into lock cylinder housing. Ensure cylinder is fully seated and aligned in interlocking washer before turning key to OFF position. This will permit cylinder retaining pin to extend into cylinder housing hole.
- Rotate lock cylinder, using lock cylinder key, to ensure correct mechanical operation in all positions.
- Connect battery ground cable.

**Non-Functional****Removal**

The following procedure applies to vehicles in which the ignition lock is inoperative and the lock cylinder cannot be rotated due to a lost or broken lock cylinder key, unknown key number, or a lock cylinder cap that has been damaged and/or broken to the extent that the lock cylinder cannot be rotated.

- Disconnect battery ground cable.

- Remove steering wheel as outlined.
- Using channel-lock pliers or vise-grip-type pliers, twist lock cylinder cap until it separates from lock cylinder.
- Using a 3/8-inch diameter drill, drill down middle of ignition lock key slot approximately 44mm (1-3/4 inch) until lock cylinder breaks loose from breakaway base of lock cylinder. Remove lock cylinder and drill shavings from lock cylinder housing.
- Remove retainer, washer, ignition switch and actuator. Thoroughly clean all drill shavings and other foreign materials from casting.
- Carefully inspect lock cylinder housing for damage from the above operation. If damage is apparent, housing must be replaced.

**Installation**

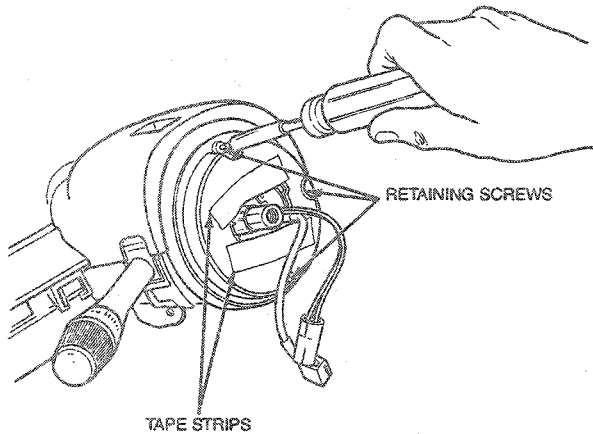
- Replace lock cylinder housing, if damaged.
- Install actuator and ignition switch as outlined.
- Install trim and electrical parts.
- Install new ignition lock cylinder as outlined.
- Install steering wheel as outlined.
- Check lock cylinder operation.

**Contact Assembly****Removal**

- Ensure that vehicle's front wheels are in the straight-ahead position and steering column shaft alignment mark is at the 12 o'clock position.
- Disconnect battery ground cable and air bag backup power supply.
- Remove steering wheel as outlined.
- Remove lower RH and LH mouldings from instrument panel by pulling up and snapping out of retainer.
- Remove instrument panel lower trim panel and lower steering column shroud.
- Disconnect contact assembly wire harness.
- Apply two strips of tape across contact assembly stator and rotor to prevent accidental rotation.
- Remove lock cylinder and remove key warning buzzer wire.
- Detach harness 14401 mating connectors down column side.

## REMOVAL AND INSTALLATION (Continued)

- Remove three contact assembly retaining screws and pull contact assembly off steering column shaft.



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## Installation

- Ensure that vehicle's front wheels are in the straight-ahead position and steering column shaft alignment mark is at the 12 o'clock position.
- Align contact assembly to column shaft and mounting bosses and slide contact assembly on to the shaft.
- Install three retaining screws. Tighten screws to 2-3 N·m (18-26 lb-in). Remove tape strips.

NOTE: If a new contact assembly is being installed, remove the plastic lock mechanism after contact assembly is secured to column.

- Route contact assembly down column assembly and connect to wire harness.
- Install key warning buzzer into lock cylinder housing and secure lock cylinder.
- Connect harness 14401 connectors down column side.
- Install lower shroud and instrument panel cover.
- Install steering wheel as outlined.
- Connect air bag backup power supply and battery ground cable.
- Verify air bag warning indicator.

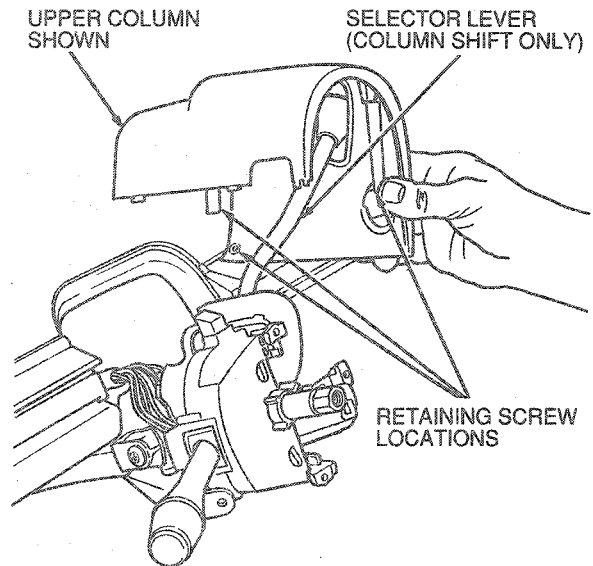
## Steering Column

Ensure that vehicle front wheels are in the straight-ahead position.

## Removal

NOTE: All steering column components are assembled with fasteners. They are designed with a thread locking system to prevent loosening due to vibrations associated with normal vehicle operation.

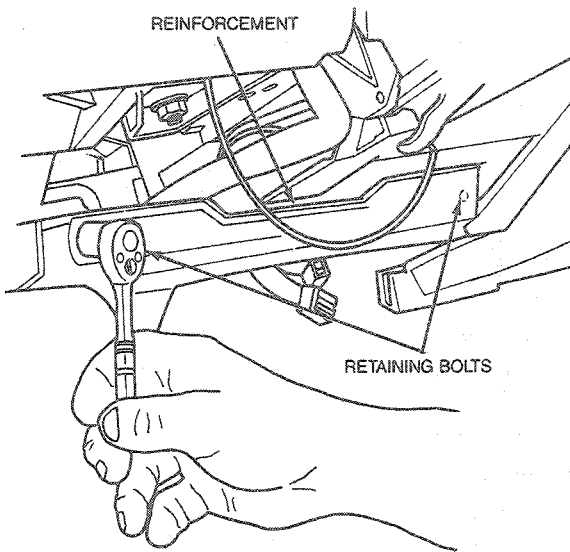
- Disconnect battery ground cable and air bag backup power supply.
- Remove steering wheel as outlined.
- Remove instrument panel lower trim cover.
- Remove air bag clockspring contact assembly as outlined.
- Remove tilt lever by unscrewing it from column and remove four screws.
- Rotate ignition lock cylinder to RUN position. Using a 1/8-inch drift, depress lock cylinder retaining pin through access hole and remove lock cylinder.
- Remove four retaining screws from lower shroud and remove column shrouds.



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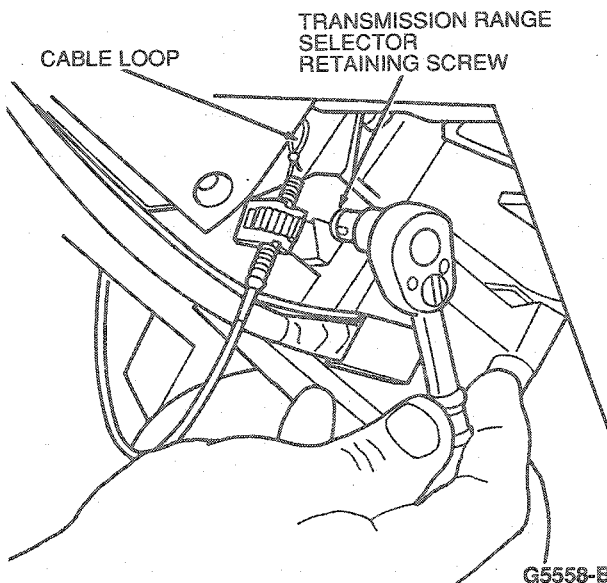
## REMOVAL AND INSTALLATION (Continued)

8. Remove two instrument panel reinforcement brace retaining bolts. Remove reinforcement.



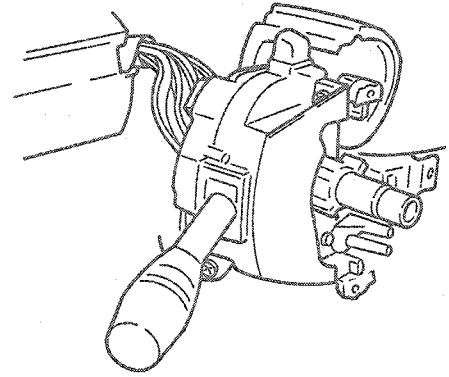
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9. Disconnect transmission range selector cable from actuator housing by removing one screw (column shift).



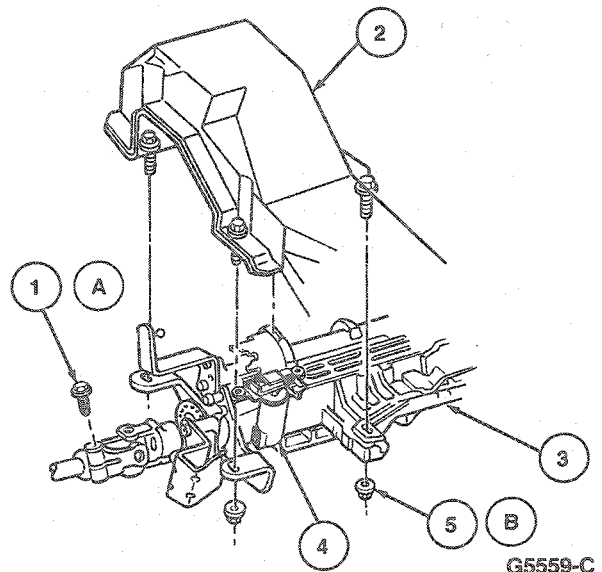
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10. Disconnect transmission range selector cable loop from shift tube hook (column shift).
11. Remove two multi-function switch retaining screws and set multi-function switch aside. Remove wiring connector from ignition switch.



G5809-B

12. Remove column skid plate.
13. Remove pinch bolt from steering shaft flex coupling.
14. While supporting column assembly, remove four column assembly retaining nuts. Lower column and disconnect vacuum hoses at parking brake release switch or remove vacuum release assembly.
15. Disconnect shift cable from selector lever pivot.
16. Remove shift cable and bracket from lower column mounting.
17. Remove four brake shift interlock cable retaining screws and remove cable (console shift).
18. Remove column from vehicle.



G5559-C

## REMOVAL AND INSTALLATION (Continued)

Item	Part Number	Description
1A	N803942-S100	Screw
2	—	Body
3	3C529	Steering Column Assy
4	3Z719	Brake Shift Interlock Solenoid
5B	N806423-S56	Nut (4 Req'd)
A		Tighten to 41-56 N·m (31-41 Lb·Ft)
B		Tighten to 13-19 N·m (9-14 Lb·Ft)

## Installation

- Align the column lower universal joint to lower shaft. Install one bolt and tighten to 41-56 N·m (31-41 lb-ft).
- Connect parking brake release vacuum hoses.
- Position Brake Solenoid Interlock cable and install four retaining screws (automatic console shift).
- Support the column assembly to column support bracket. Install four retaining nuts and tighten to 13-19 N·m (9-14 lb-ft).
- Position shift cable bracket (with shift cable attached) to lower two screws of column. Tighten to 7-11 N·m (5-8 lb-ft).
- Snap shift cable onto shift selector pivot ball.
- Position multi-function switch and install two retaining screws. Tighten to 2-3 N·m (18-26 lb-in).
- Connect all electrical connectors.
- Attach transmission range selector cable loop on shift selector hook, and install transmission range selector cable bracket to actuator housing. Install retaining screw.
- Install steering column to parking brake control shake brace.
- Install instrument panel reinforcement brace and secure with two retaining bolts.
- Install lower instrument panel cover.
- Install upper and lower column shrouds.
- Install lock cylinder assembly.
- Install tilt lever onto column.
- Install air bag contact assembly screw. Tighten to 2-3 N·m (18-26 lb-in).
- Install steering wheel onto column shaft. Install a new bolt and tighten to 31-48 N·m (22-33 lb-ft).
- Position air bag module to wheel. Install four retaining nuts. Tighten to 4-5.4 N·m (36-47 lb-in).
- Connect battery ground cable and air bag backup power supply.
- Verify air bag warning indicator.

## Steering Shaft, Intermediate

## Removal

- Remove bolt from upper U-joint-to-shaft connection. Collapse intermediate shaft.
- Remove three nuts retaining primary boot-to-dash panel and remove boot.  
**CAUTION: Be sure the steering column is in the locked position. The lower end of the steering column may be wired in such a way to prevent the steering wheel from being turned as air bag clockspring assembly will be damaged.**
- Remove bolt retaining intermediate shaft assembly to steering gear input shaft.
- From inside of vehicle, remove intermediate shaft.
- Remove secondary boot.

## Installation

- Turn secondary boot inside out and position over three mounting studs then mount to gear.
- Install intermediate shaft through boot and to steering gear input shaft. Install new bolt and tighten to 41-56 N·m (31-41 lb-ft).
- Install primary boot over intermediate shaft and down onto three studs in dash panel.
- Install three boot retaining nuts. Tighten to 5-7 N·m (44-61 lb-in).
- Extend shaft and insert into U-joint at end of steering column. Tighten bolt to 41-56 N·m (31-41 lb-ft).
- Check steering column for proper operation.

Gear Shift Lever, Cover and/or Shift Lever Clip  
Column Shift

## Removal

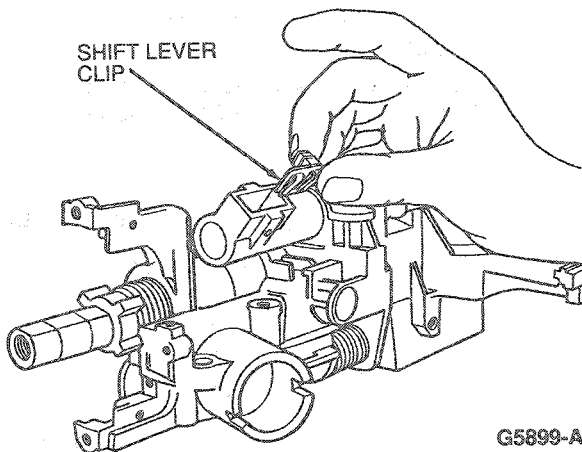
- Remove tilt lever by unscrewing it from the column.
- Turn ignition switch to RUN position. Using a 1/8-inch drift, depress lock cylinder retaining pin through access hole and remove lock cylinder.
- Remove lower instrument panel cover retaining screws and remove cover.
- Remove four retaining screws from lower shroud. Remove upper and lower shroud assemblies.
- Remove shift lever cover, pin assembly and shift lever.
- If necessary, remove shift lever clip.

## Installation

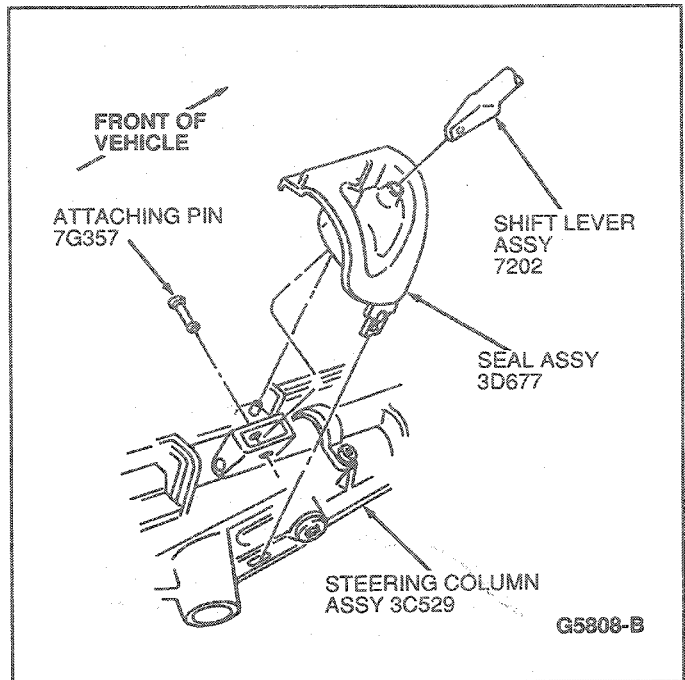
- If removed, install shift lever clip into opening in shifter housing assembly as shown.
- Insert shift lever through hole in PVC cover. Position cover on shift lever.

## REMOVAL AND INSTALLATION (Continued)

3. Insert shift lever into opening in shifter housing assembly.
4. Install a new pin assembly into position and tap in place until the head seats against shifter housing assembly and the Tinnerman nut is visible on bottom of shifter housing.
5. Position shift lever cover on the lock cylinder housing. Insert lower attachment into the slot on side of housing.
6. Position upper attachment on mounting pin and press into place. Install a Tinnerman nut to secure cover to pedestal on lock cylinder housing.
7. Install upper and lower shrouds with four screws.
8. Install lower instrument panel cover and retaining screws.
9. Install lock cylinder into lock cylinder housing.
10. Install tilt lever onto column.
11. Check for proper start in PARK and NEUTRAL. Ensure start circuit cannot be actuated in DRIVE or REVERSE positions and the column is locked in the LOCK position.



G5899-A



## Ignition Lock Cylinder

## Removal

1. Rotate ignition lock cylinder to RUN position. Using a 1/8-inch drift, depress lock cylinder retaining pin through access hole and remove lock cylinder.

**CAUTION:** Carefully note the position of the bearing retainer prior to removal.

2. Remove blue plastic bearing retainer by inserting a screwdriver or similar tool, with a 90 degree bend on the tip, between bearing retainer and bearing and by prying upward.
3. Insert tip of a screwdriver into Double-D slot of bearing, then rotate 90 degrees. Remove bearing.
4. Remove lock drive gear. Carefully note relationship of lock drive gear to position of rack teeth.

## Installation

1. Position lock drive gear in base of lock cylinder housing in the same position as that noted during removal procedure. The position of lock drive gear is correct if last tooth on drive gear is meshed with last tooth on rack.
2. Position bearing retainer in lock cylinder housing. Insert tip of a screwdriver into Double-D slot of bearing, then rotate 90 degrees.
3. Press blue plastic bearing retainer into lock cylinder housing. Ensure retainer is in its original position.
4. Line up flats of drive gear with flats of washer by pulling down on the column lock actuator.
5. Install lock cylinder assembly.

**REMOVAL AND INSTALLATION (Continued)**

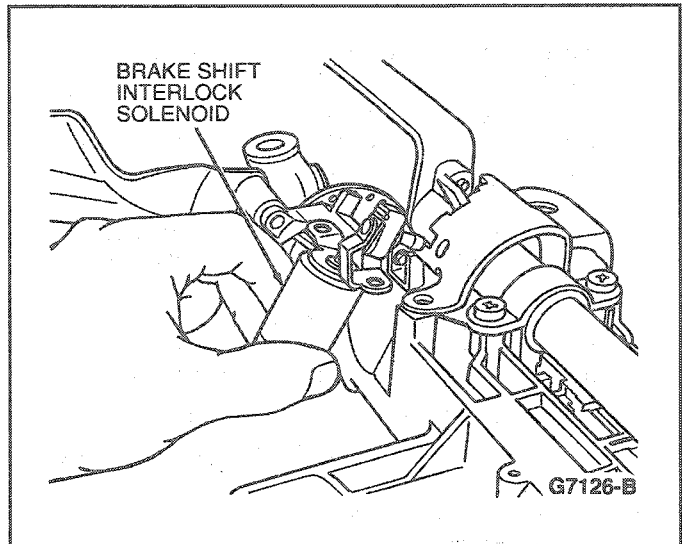
6. Check for proper start in PARK and NEUTRAL. Also, check to ensure start circuit cannot be actuated in DRIVE or REVERSE positions and the column is locked in LOCK position.

**Brake Shift Interlock Solenoid****Removal**

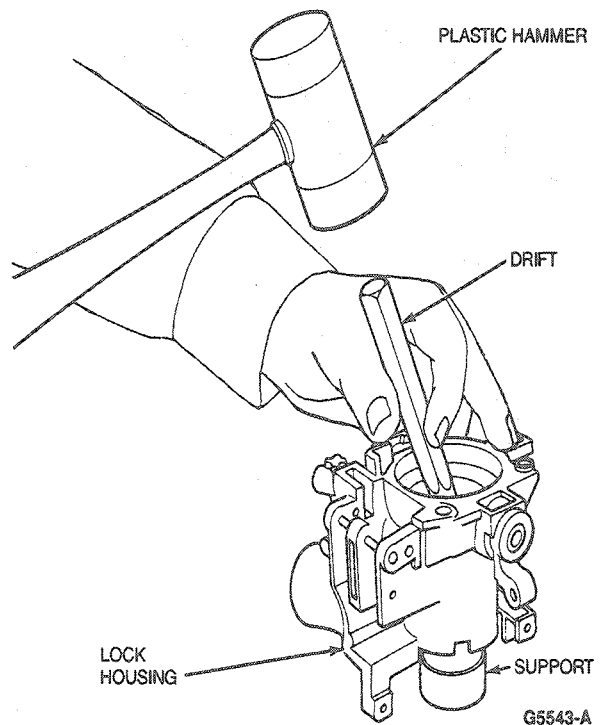
1. Disconnect battery ground cable and air bag backup power supply.
2. Remove lower RH and LH mouldings from instrument panel by pulling up and snapping out of retainer.
3. Remove five retaining screws from instrument panel lower cover and remove cover.
4. Remove instrument panel reinforcement.
5. Disconnect transmission range selector cable from actuator housing by removing one screw.
6. Remove four column attaching nuts and lower column assembly.
7. Remove electrical harness from brake shift interlock (BSI) solenoid assembly.
8. Remove three screws attaching BSI solenoid and insert plate to column assembly and remove solenoid and insert plate. Separate solenoid from insert plate by removing tinnerman clip.

**Installation**

1. Position brake shift interlock solenoid and insert plate in place and attach to column assembly with three screws as shown.
2. Connect electrical harness to BSI solenoid.
3. Attach column assembly to half car beam with four nuts.
4. Connect transmission range selector cable to column assembly with one screw.
5. Attach instrument panel reinforcement brace with three bolts.
6. Attach instrument panel lower trim cover with five bolts.
7. Install RH and LH mouldings on instrument panel.
8. Connect air bag backup power supply and battery ground cable.

**Shaft Bearing, Upper  
Column Removed****Removal**

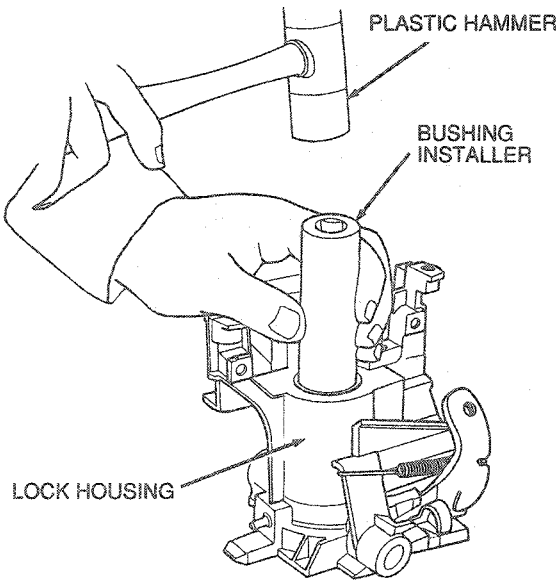
1. Remove lock housing from steering column assembly as outlined.
2. Suitably support housing and tap out small bearing with an appropriate drift and a plastic hammer.



## REMOVAL AND INSTALLATION (Continued)

### Installation

1. Suitably support housing. Position small bearing so that the opening between races is "up." Tap into place with a plastic hammer and a bushing driver installer or socket the same size as outer race of bearing.
2. Install housing on steering column as outlined.



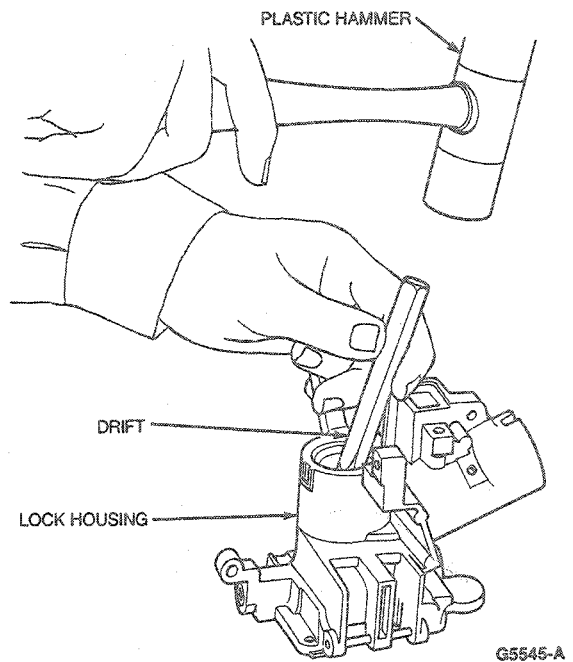
G5544-B

### Shaft Bearing, Intermediate

#### Column Removed

#### Removal

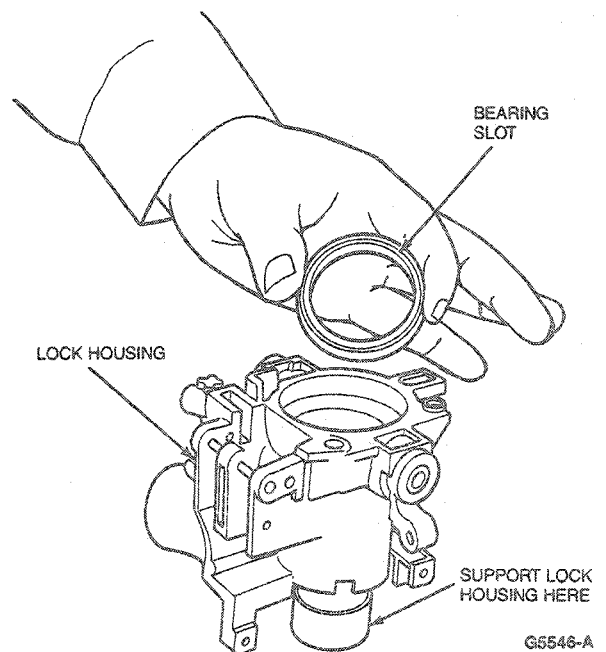
1. Remove lock housing as outlined.
2. Set housing flat on workbench and tap large bearing loose with suitable drift and a plastic hammer.



G5545-A

### Installation

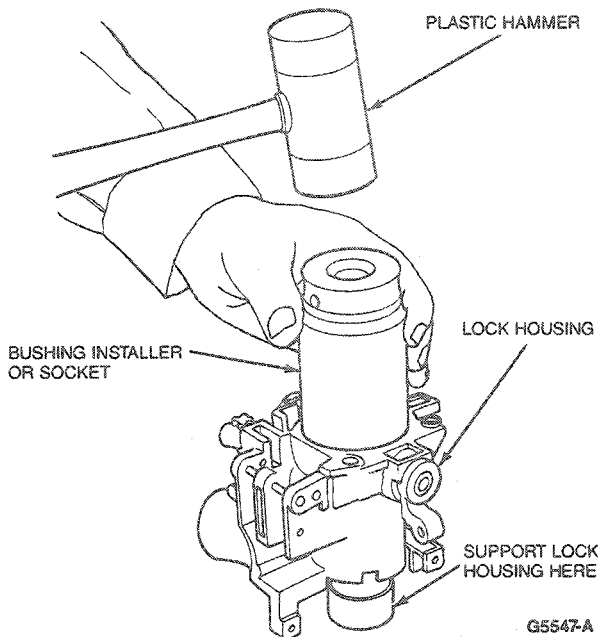
1. Support lock housing on workbench.
2. Position bearing so that the opening between races will face up, or out from housing, when installed.



G5546-A

**REMOVAL AND INSTALLATION (Continued)**

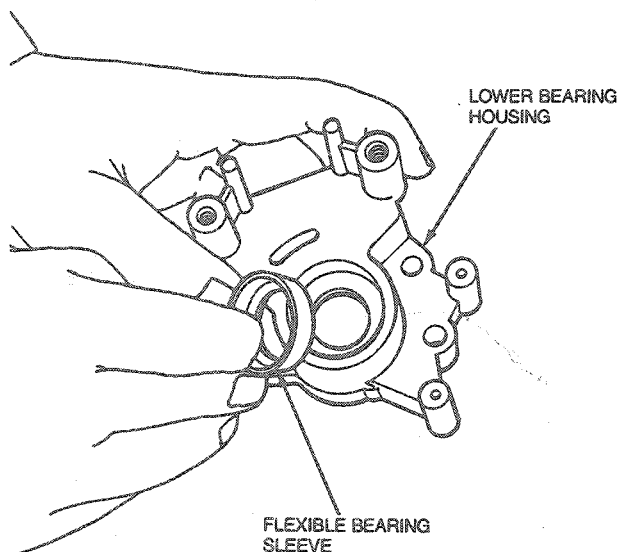
- Using a socket or bushing driver the same size as outer race of bearing, tap bearing into housing with a plastic hammer until fully seated.



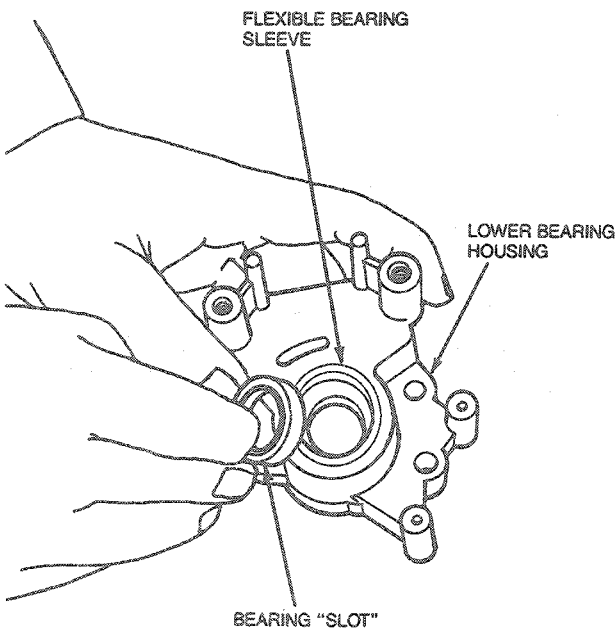
- Suitably support housing and tap out bearing with a hammer and a drift.

**Installation**

- Inspect flexible bearing sleeve. Replace if damaged.



- Position bearing sleeve in housing.

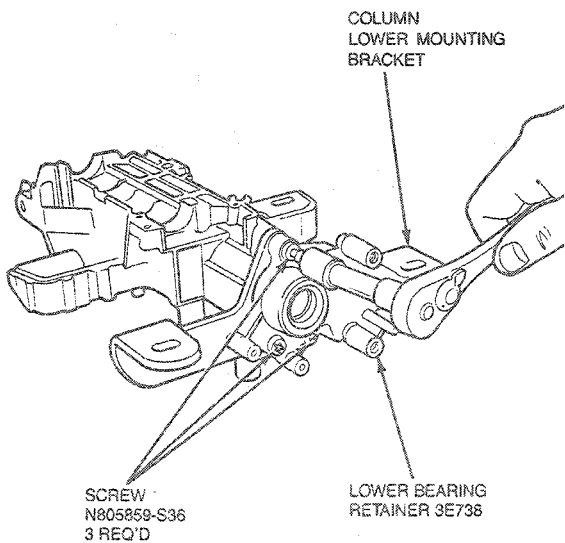


- Press in the new bearing with thumb pressure until seated. Slot between inner and outer races should face down when installed in the vehicle.

**Shaft Bearing, Lower  
Column Removed**

**Removal**

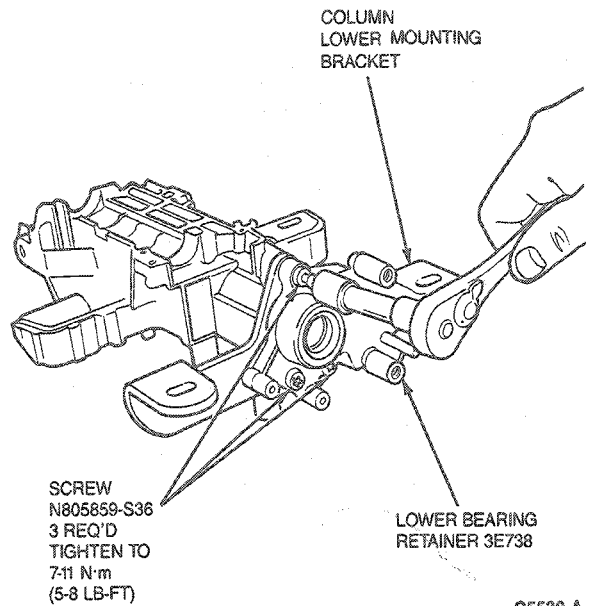
- Remove lower steering shaft bearing and housing assembly as outlined.





**REMOVAL AND INSTALLATION (Continued)**

4. Install bearing housing on steering column as outlined.



G5530-A

**DISASSEMBLY AND ASSEMBLY**

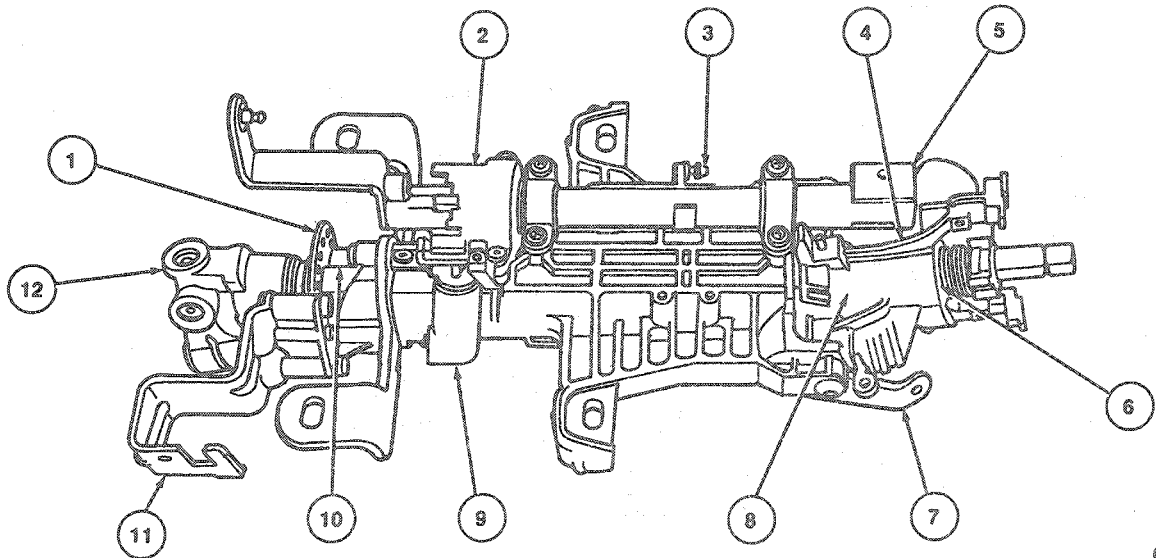
**Steering Column**

**Disassembly**

1. Disconnect battery ground cable and air bag backup power supply.

**Column Shift Only**

2. Remove steering wheel assembly as outlined.
3. Remove steering column from vehicle as outlined.
4. Remove lower U-joint, spring, sensor ring and bushing.



G5449-C

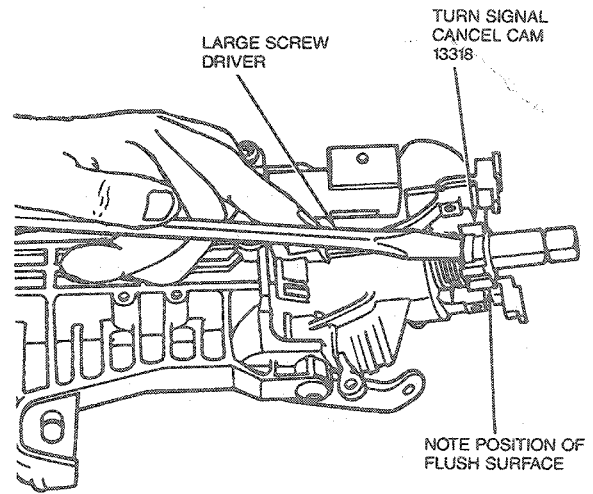
**DISASSEMBLY AND ASSEMBLY (Continued)**

Item	Part Number	Description
1	3C131	Sensor Ring
2	7A216	Shift Control Selector Bracket
3	7212	Shift Position Indicator Attaching Point
4	3511	Tilt Lock Housing
5	7212	Shift Selector Assy

(Continued)

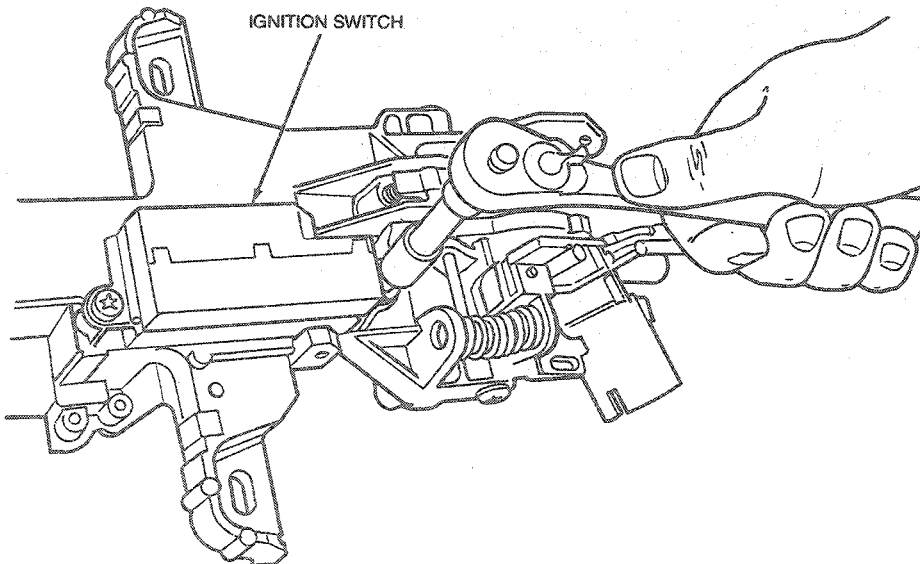
Item	Part Number	Description
6	3517	Upper Bearing (In Lock Housing)
7	3D544	Tilt Release
8	3517	Intermediate Bearing (In Lock Housing)
9	3Z719	Brake Shift Interlock Solenoid
10	3517	Lower Bearing Assy
11	7E364	Shift Cable Bracket
12	3N725	Flex Coupling

5. Remove turn signal cancelling cam by pushing up with flat-bladed screwdriver. Note direction of flush surface.



G5450-A

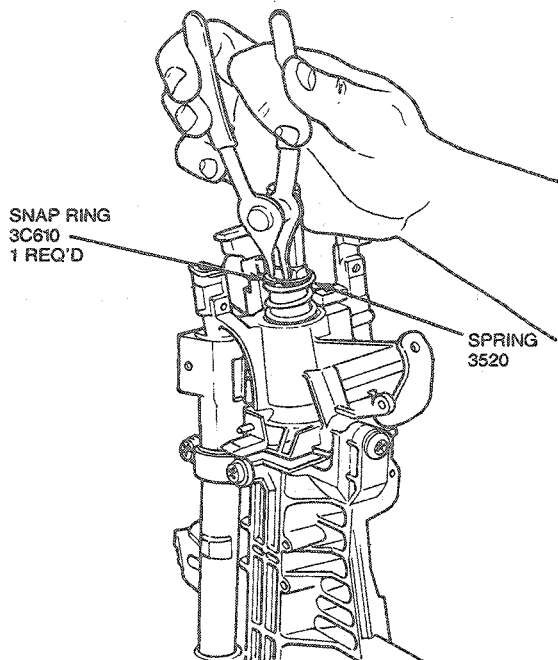
6. Remove ignition switch assembly.



G5538-A

DISASSEMBLY AND ASSEMBLY (Continued)

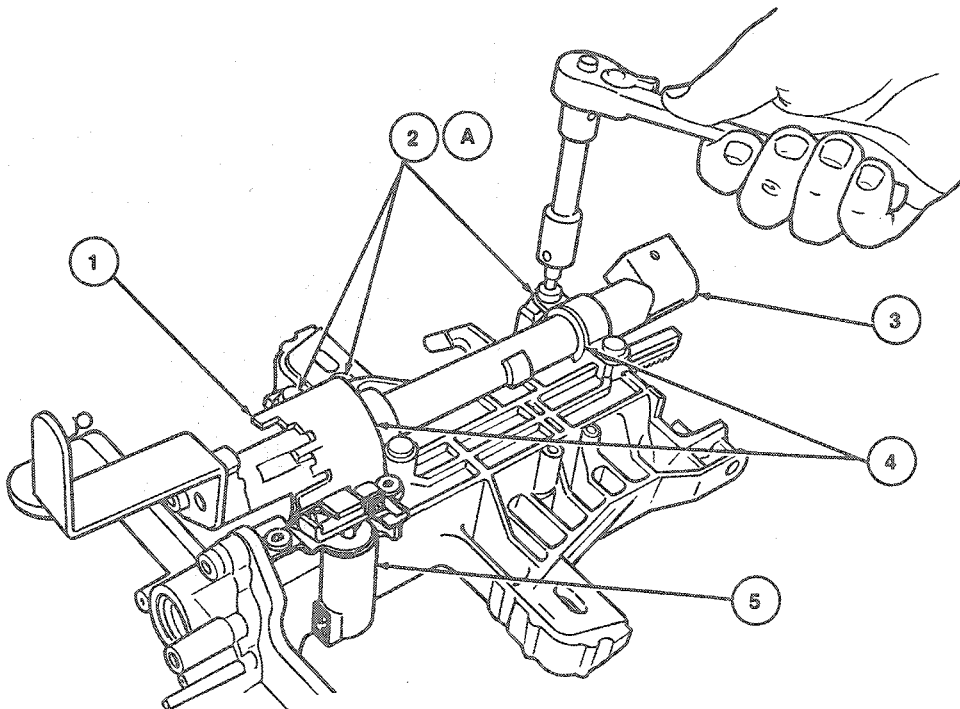
7. Remove upper snap ring and coil spring.



G5531-A

- 8. Remove steel sleeve and ring.
- 9. Remove shift control assembly and shift control bracket (column shift).
- 10. Remove brake shift interlock solenoid (column shift).
- 11. Remove shift cable bracket (column shift).

Column Shift

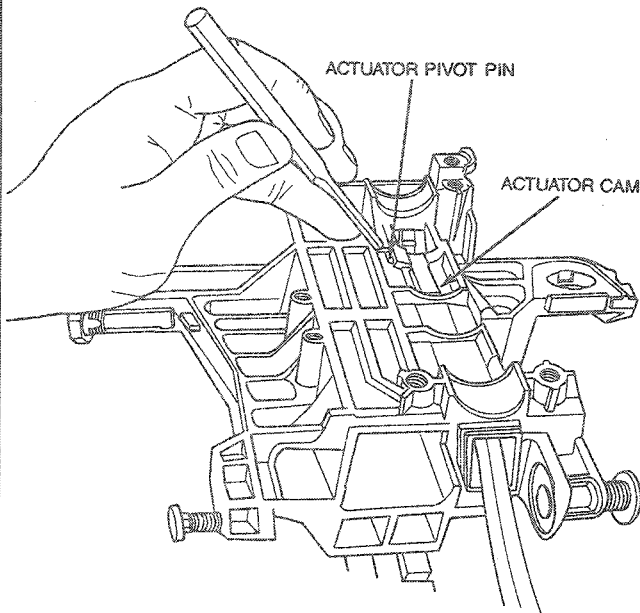


G5540-D

**DISASSEMBLY AND ASSEMBLY (Continued)**

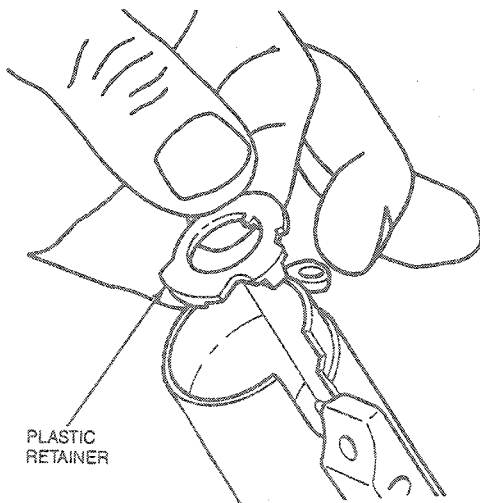
Item	Part Number	Description
1	7A216	Shift Control Selector Bracket
2	N805858	Screws (6 Req'd)
3	7212	Shift Control Assy
4	7L278	Bushings
5	3Z719	Brake Shift Interlock Solenoid
A		Tighten to 7-11 N·m (5-8 Lb-Ft)

12. Using a drift tap lock actuator cam pivot pin loose. Remove with diagonal pliers.



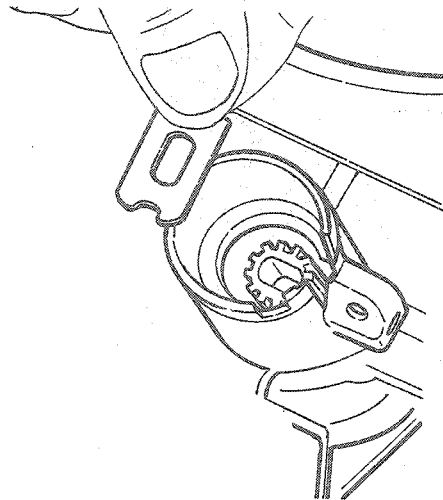
G5561-A

13. Remove plastic bearing retainer from lock cylinder bore.



G5447-A

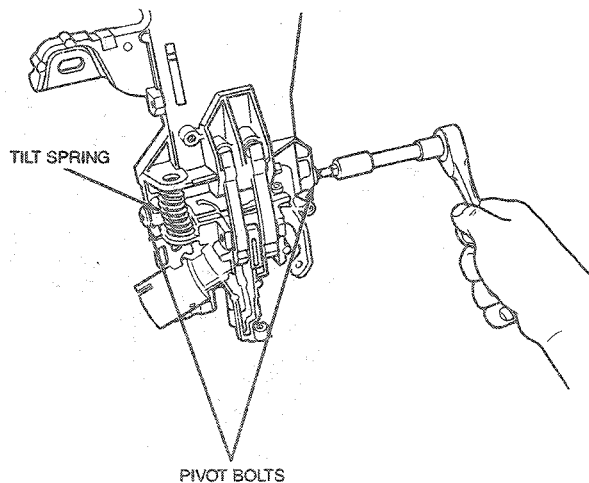
14. Remove metal bearing from lock cylinder bore.



G5448-A

15. Remove ignition lock gear.

16. Remove two tilt pivot bolts. Use caution as tilt spring will release when bolts are removed. Remove lock cylinder housing.

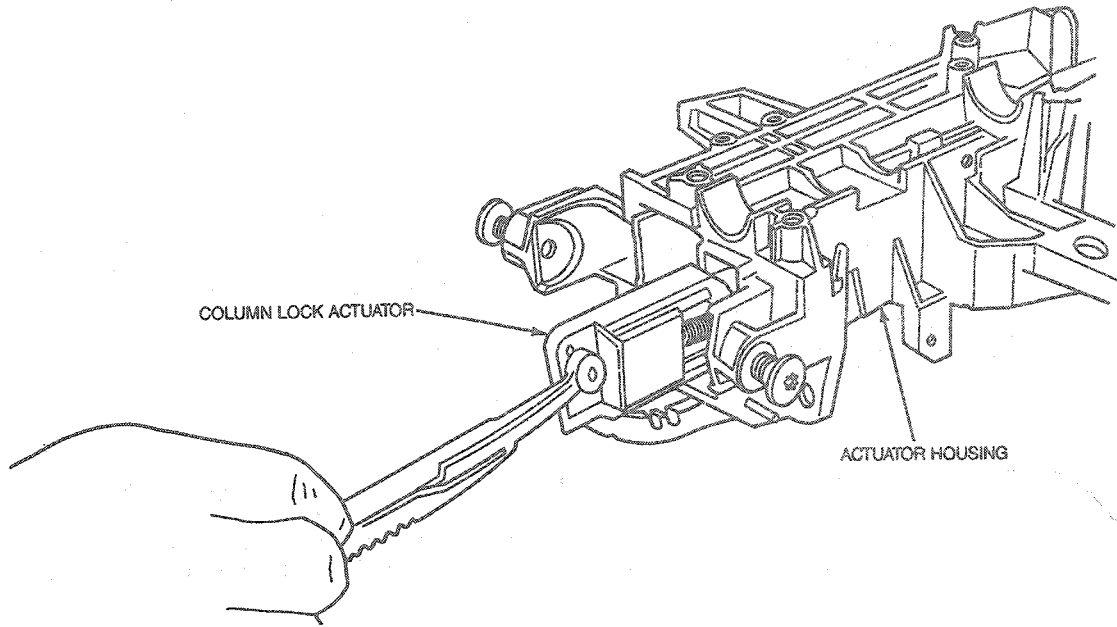


G5539-A

17. Remove steering shaft from column assembly.

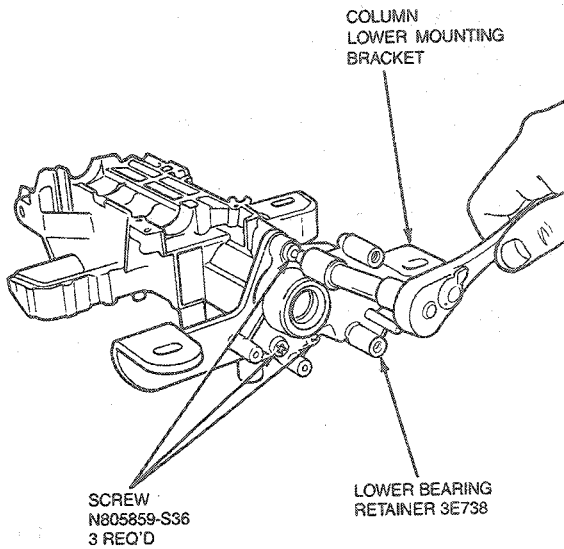
DISASSEMBLY AND ASSEMBLY (Continued)

18. Remove column lock actuator.



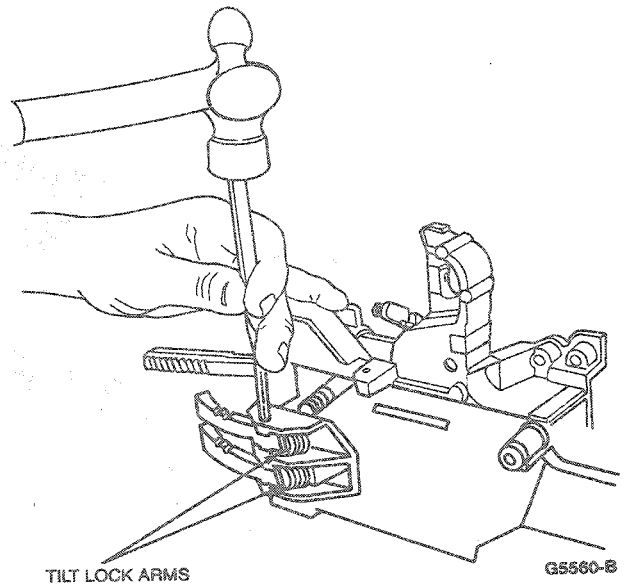
G5562-A

19. Remove lower bearing and mounting bracket.



G5541-A

20. Remove tilt position lever arm pivot pin using a drift. Remove lever lock arms and springs.



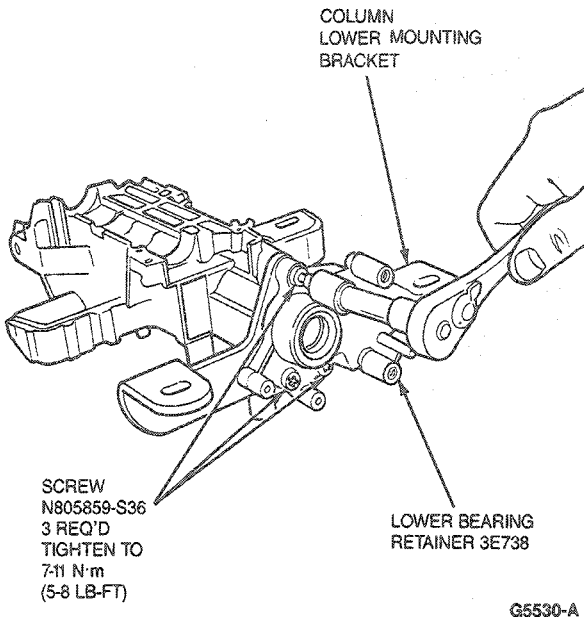
G5560-B

Assembly

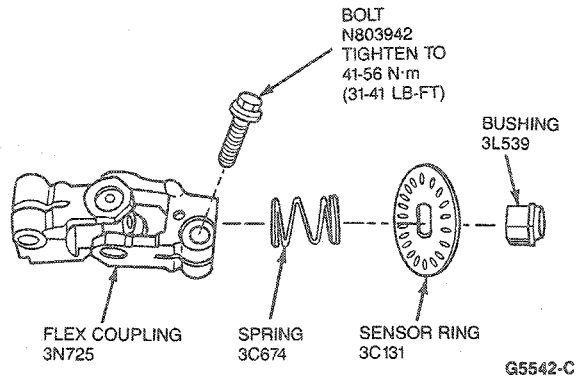
1. Install steering shaft into housing.

DISASSEMBLY AND ASSEMBLY (Continued)

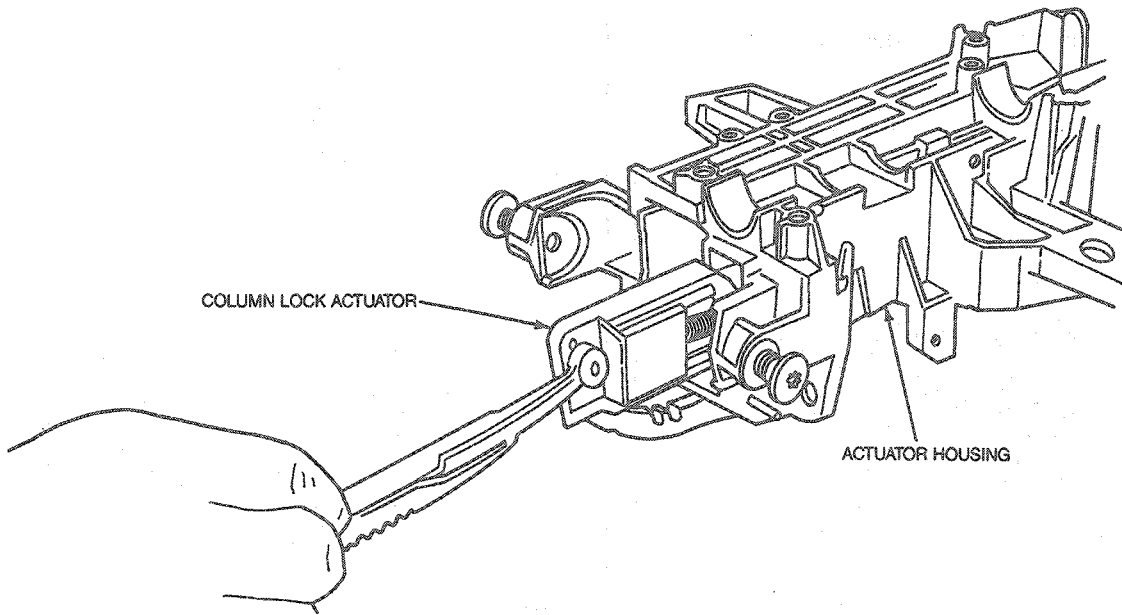
- 2. Install lower bearing and column mounting bracket. Tighten screws to 7-11 N·m (5-8 lb-ft).



- 3. Install sensor ring, bushing, spring and flex coupling to steering shaft. Tighten pinch bolt to 41-56 N·m (31-41 lb-ft).

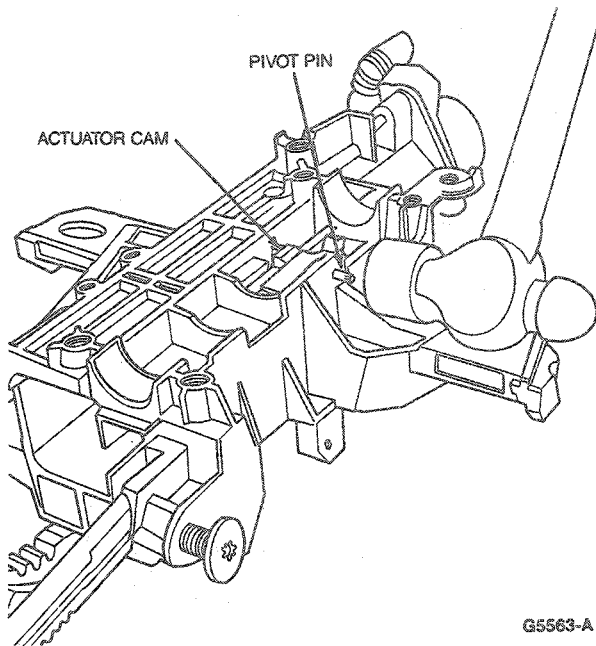


- 4. Position lock actuator assembly in housing. Spray upper and lower actuators with Multi-Purpose Grease D7AZ-19584-AA (ESR-M1C159-A, ESB-M1C106-B) or equivalent.

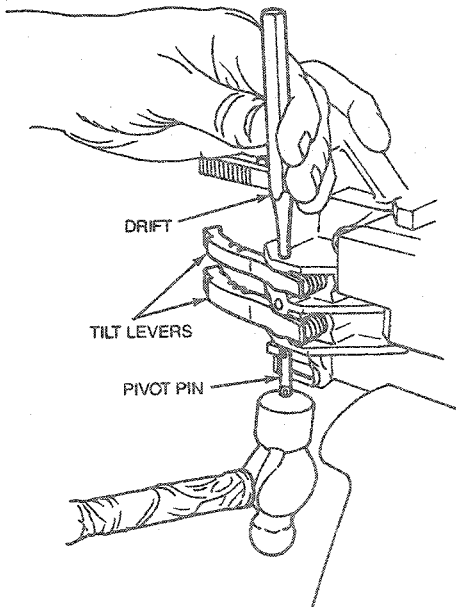


**DISASSEMBLY AND ASSEMBLY (Continued)**

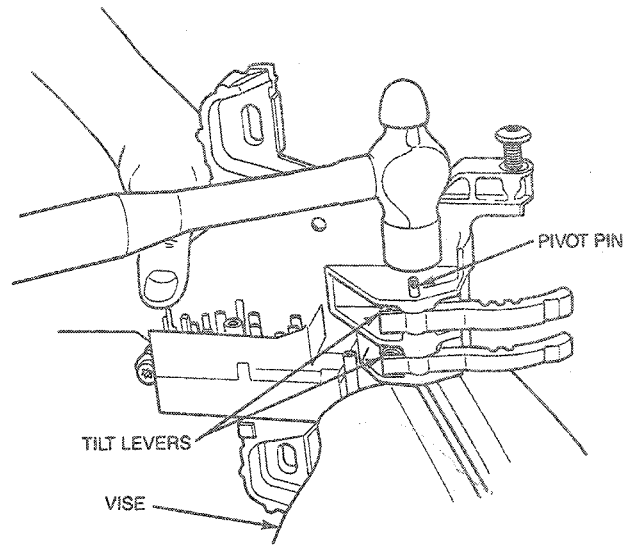
5. Position actuator cam in lock housing and install cam pivot pin with small hammer. Tap pin in until flush with housing.



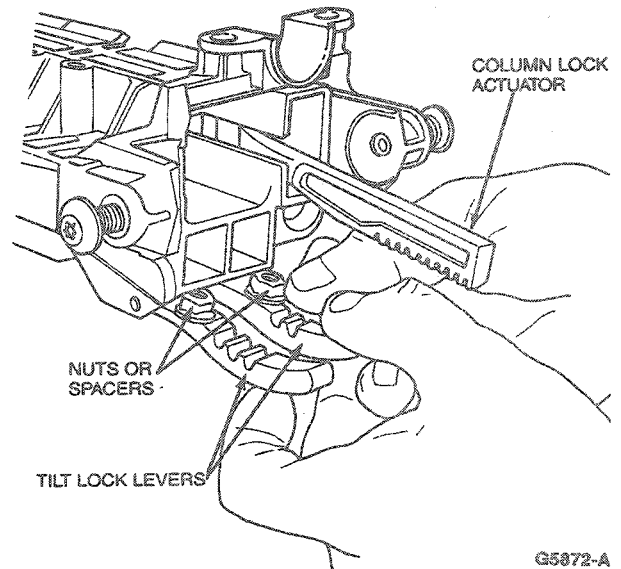
6. Install one tilt lever spring and arm into housing using a drift to hold in place.
7. Install the other lever spring and arm with pivot pin. Tap pin into place while driving out drift.



8. Support housing in a vise and drive pin flush with housing.



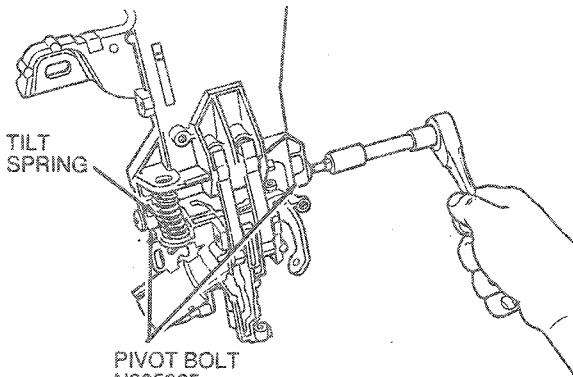
9. Place two nuts or spacers to hold tilt lock arms away from housing.



**DISASSEMBLY AND ASSEMBLY (Continued)**

10. Position tilt spring on lock housing. With assistant, install lock housing and pivot bolts. Tighten to 20-28 N·m (14-20 lb-ft).

NOTE: Lube pivot bolts with Multi-Purpose Grease DOAZ-19584-AA (ESR-M1C159-A, ESB-M1C93-A) or equivalent before installing.

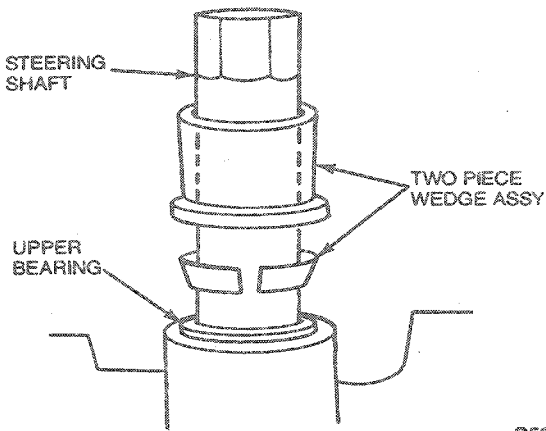


TILT SPRING

PIVOT BOLT  
N805865  
2 REQ'D  
TIGHTEN TO  
20-28 N·m  
(14-20 LB-FT)  
LUBRICATE SHOULDER WITH  
MULTI-PURPOSE GREASE  
DOAZ-19584-AA  
(ESR-M1C159-A, ESB-M1C93-A)  
OR EQUIVALENT

G5528-C

11. Install steel sleeve and ring over steering shaft to upper bearing.



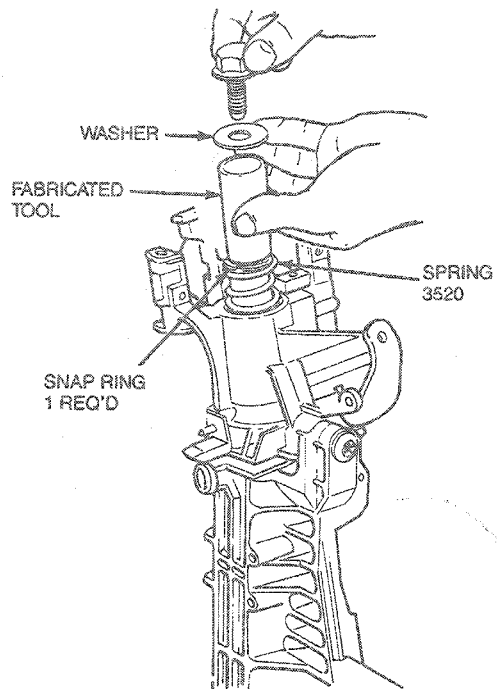
STEERING SHAFT

UPPER BEARING

TWO PIECE WEDGE ASSY

G5665-A

12. Install spring and new snap ring on top side of spring using a 3/4-inch by 2-1/4 inch PVC pipe.



WASHER

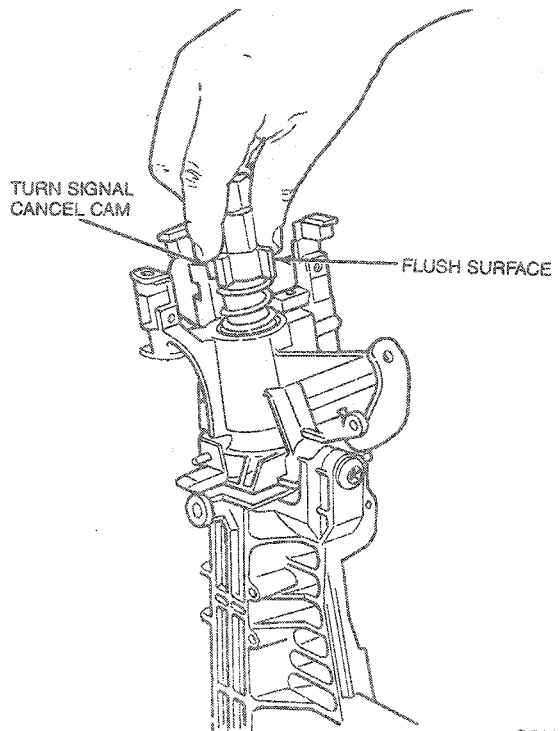
FABRICATED TOOL

SPRING 3520

SNAP RING 1 REQ'D

G5802-A

13. Install turn signal cancel cam, flush surface "up".



TURN SIGNAL CANCEL CAM

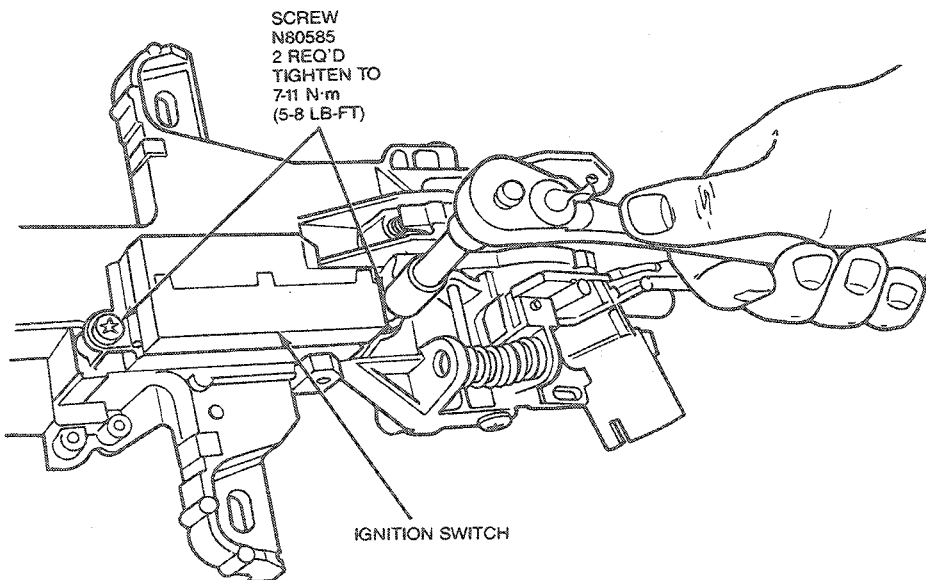
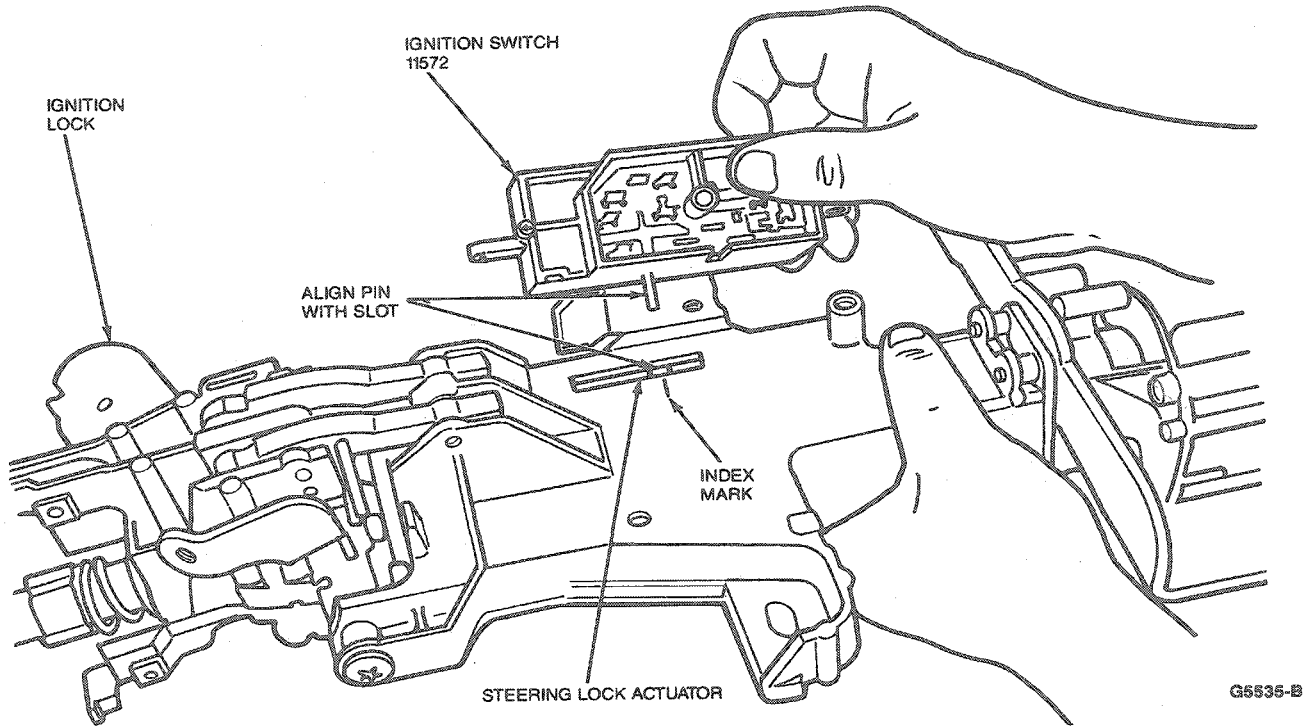
FLUSH SURFACE

G5803-A



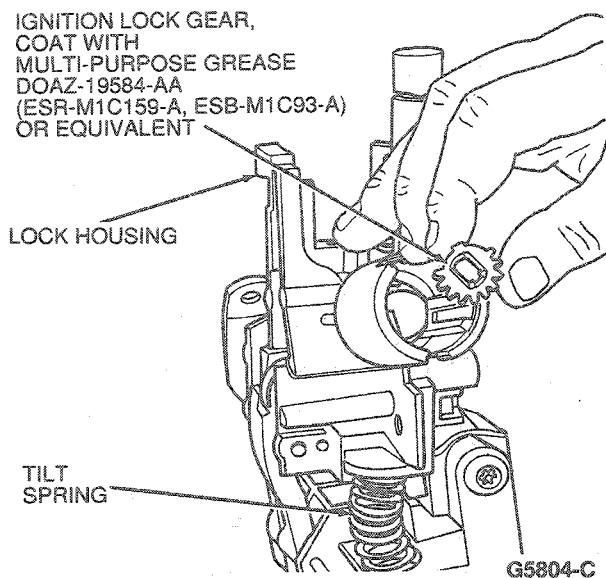
**DISASSEMBLY AND ASSEMBLY (Continued)**

14. Install ignition switch. Align pin from switch with slot in lock / column assembly. Position slot in lock / column assembly with index mark on casting. Tighten two retaining screws to 7-11 N·m (5-8 lb-ft).

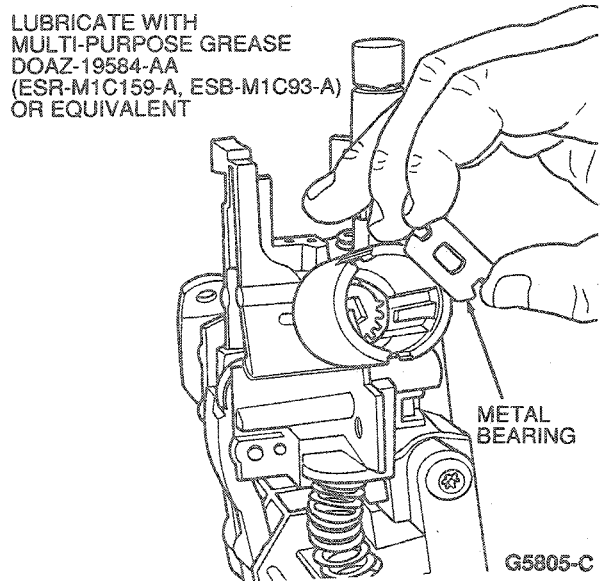


## DISASSEMBLY AND ASSEMBLY (Continued)

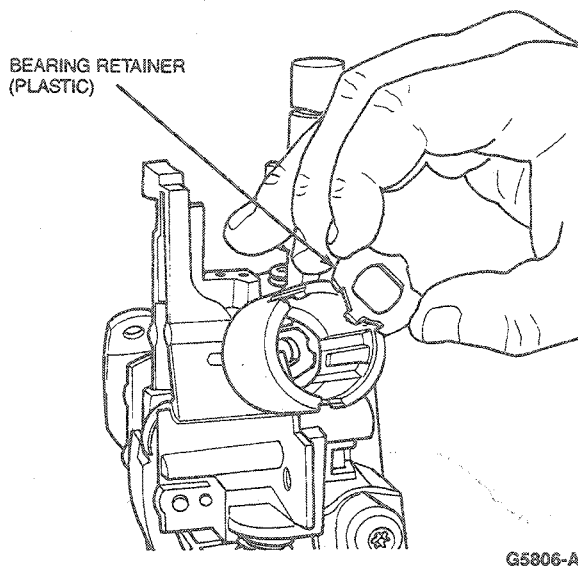
15. Install ignition lock gear. Coat gear with Multi-Purpose Grease DOAZ-19584-AA (ESR-M1C159-A, ESB-M1C93-A) or equivalent.



16. Install metal bearing. Lubricate with Multi-Purpose Grease DOAZ-19584-AA (ESR-M1C159-A, ESB-M1C93-A) or equivalent.

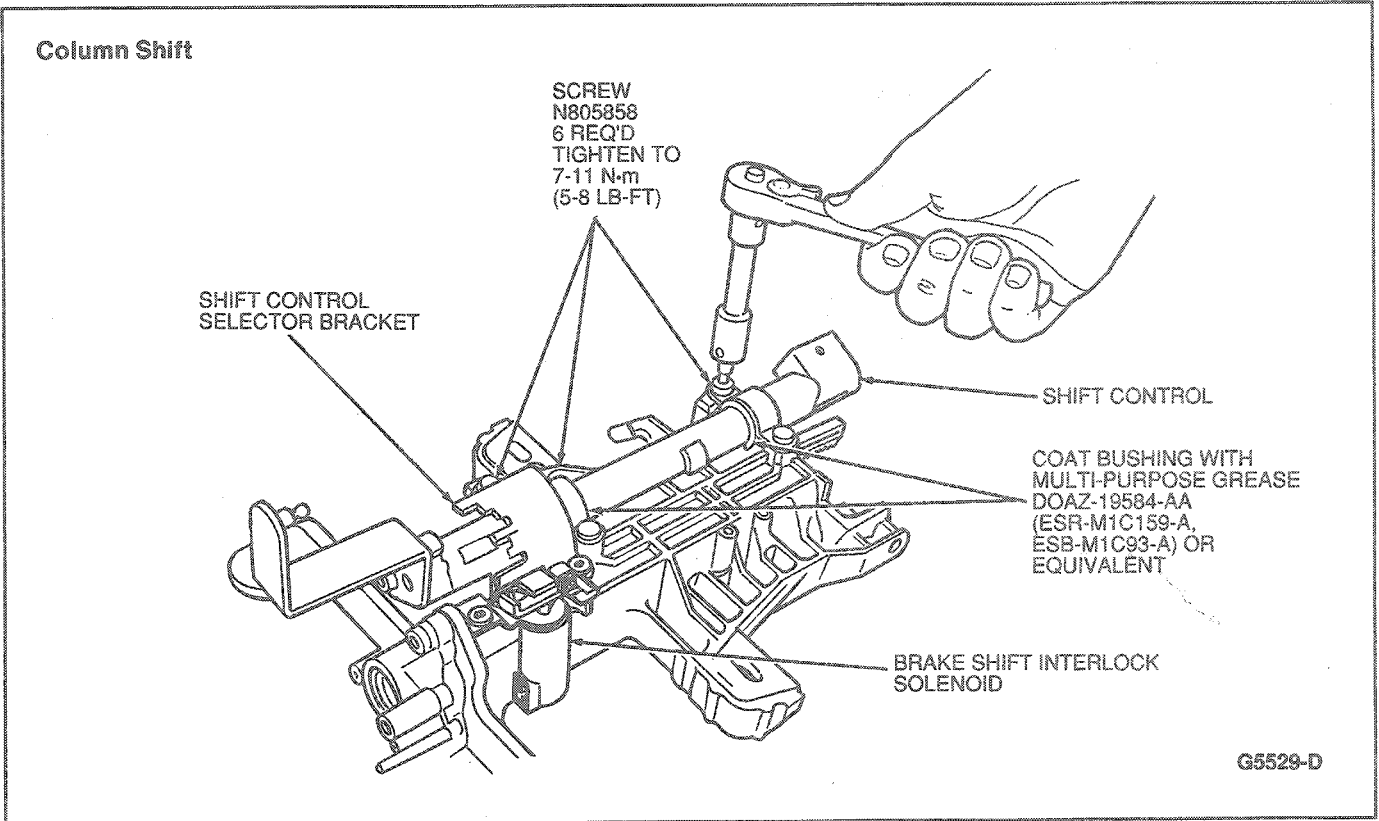


17. Install plastic bearing retainer.



18. Install shift control tube assembly (column shift only). Coat bushings with Multi-Purpose Grease DOAZ-19584-AA (ESR-M1C159-A, ESB-M1C93-A) or equivalent. Tighten screws to 7-11 N-m (5-8 lb-ft).
19. Install shift control selector bracket.
20. Install brake shift interlock solenoid.

**DISASSEMBLY AND ASSEMBLY (Continued)**



21. Install shift cable bracket on lower column bearing assembly with two bolts (column shift).
22. Install column in vehicle as outlined.
23. Install air bag clockspring contact as outlined.
24. Install steering wheel as outlined.
25. Install air bag module. Refer to Section O1-20B.
26. Connect battery ground strap and air bag backup power supply.
27. Verify air bag warning indicator.

**ADJUSTMENTS**

**Steering Wheel Spoke Position**

When the flats on the steering gear input shaft are positioned as shown, the front wheels should be in the straight-ahead position and the steering wheel spokes should be in their normal position. They can be repositioned by adjusting the tie rods or adjusting toe. Refer to Section O4-00. The steering wheel 12 o'clock mark must be aligned with steering shaft 12 o'clock mark when toe is adjusted.

TO FRONT OF VEHICLE      FLATS


TOP OF STEERING GEAR INPUT SHAFT      G4439-A

**SPECIFICATIONS**

**TORQUE SPECIFICATIONS**

Description	N-m	Lb-Ft
Steering Wheel Retaining Bolt	31-48	22-33
Contact Assembly Screw	2-3	18-26 (Lb-In)
Steering Column Mounting Nut	13-19	9-14
Steering Shaft Yoke Coupling Bolt	41-56	31-41
Column Lower Mounting Bracket Bolt	7-11	5-8
Lock Housing Pivot Bolt	20-28	14-20
Ignition Switch Screw	7-11	5-8
Shift Control Tube Screw	7-11	5-8
Air Bag Module Nuts	4-5.4	36-47 (Lb-In)
Lower Column Bearing Bolt	7-11	5-8
Intermediate Shaft Screw	41-56	31-41
Air Bag Screw	4-5.4	36-47 (Lb-In)
Tilt Lever	3.5-5	28-44 (Lb-In)
Steering Boot Nut	5-7	44-61 (Lb-In)

**SPECIAL SERVICE TOOLS**

Tool Number/ Description	Illustration
T67L-3600-A Steering Wheel Puller	 <p data-bbox="553 457 641 474">T67L-3600-A</p>