STEERING COLUMN SWITCHES
Article Text

1995 Cadillac Concours
For Ace Mechanics 123 Main Street San Diego Ca 92126

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ARTICLE BEGINNING

1995 ACCESSORIES & EQUIPMENT
General Motors Corp. - Steering Column Switches

"E" Body - Cadillac: Eldorado
"K" Body - Cadillac: Concours, DeVille, Seville

* PLEASE READ THIS FIRST *

WARNING: All vehicles are equipped with air bags. To avoid injury from accidental air bag deployment, read and carefully follow all SERVICE PRECAUTIONS. Before performing any repair procedures, See DISABLING & ACTIVATING AIR BAG SYSTEM For any additional information, the AIR BAG RESTRAINT SYSTEM article.

DESCRIPTION

Steering columns are designated as fixed column or tilt column, and as column shift or floor shift. Column shift and floor shift columns are basically the same except for shift lever and related components. Floor shift models with automatic transmission are equipped with a park lock cable and ignition interlock. Some column shift models are equipped with an solenoid and interlock assembly.

Multifunction switch, on left side of column, incorporates wiper/washer switch, and acts as mechanical link to dimmer and turn signal switches.

SERVICE PRECAUTIONS

The following precautions should be observed when working with air bag systems:

- **Before any repairs are performed, disconnect and shield battery ground. Because system has ability to retain voltage, remove SIR or AIR BAG fuse, and disconnect Yellow SIR connector at base of steering column, and, on vehicles with passenger-side air bags, disconnect Yellow SIR connector at base of right instrument panel behind knee bolster.**
- **Wait 2 minutes before working on vehicle. All connectors used on SIR system use Connector Position Assurance (CPA) clips to ensure connector retention. Even if system is disconnected, always use caution when working near inflator modules.**
- **Use special care when handling a sensor. DO NOT strike or jar a sensor, as air bag deployment, personal injury or improper operation of SIR system could result. A sensor must be**

replaced if dropped 3 feet or more.

* Sensors and mounting bracket bolts must be carefully torqued to ensure correct operation. Never power up SIR system when any sensor is not rigidly attached to vehicle, since sensor is easily activated and could cause air bag deployment.
* Special care is necessary when handling and storing a live (undeployed) inflator module. Rapid gas generation, produced during deployment of air bag, could throw inflator module, or any object in front of inflator module, through air.
* When carrying a live inflator module, ensure bag and trim cover are pointed away from body. If an accidental deployment occurs, bag will then deploy with reduced chance of injury. When placing a live inflator module on a bench or other surface, always face bag and trim cover up and away from surface so space is provided to allow air bag to expand in case of deployment. In addition, never carry any SIR component by wires or connector.

DISABLING & ACTIVATING AIR BAG SYSTEM

To Disable

1) Before proceeding, follow air bag service precautions. See SERVICE PRECAUTIONS. Turn steering wheel to place vehicle wheels in straight-ahead position. Turn ignition switch to LOCK position.

2) Remove SIR or AIR BAG fuse. Remove Connector Position Assurance (CPA) clip and disconnect Yellow SIR connector at base of steering column (it may be necessary to remove left sound insulator).

3) If equipped with passenger-side air bag, disconnect Yellow SIR connector under right instrument panel or behind glove box door assembly. Some models have access to connector through a trap door in glove box. Wait 2 minutes before beginning service.

To Activate

Connect Yellow SIR connector at base of steering column, and under right side instrument panel (if equipped). Install Connector Position Assurance (CPA) clips and fuse. Turn ignition switch to RUN position and ensure AIR BAG warning light flashes 7-9 times and then goes out.

TESTING

HORN CIRCUIT

Horns Inoperative

1) Remove horn relay. See HORN RELAY LOCATION table. Using a test light, check for voltage at both Orange (Orange/Black on some models) wire terminals at horn relay connector. If test light is on at both terminals, go to next step. If test light is off at one or both

terminals, repair open in Orange (Orange/Black) wire between fuse and horn relay.

2) Connect a test light between Orange (Orange/Black) and Black wire terminals of horn relay connector. Press horn button. If test light is on, go to step 4). If test light is off, check for open in Black wire between horn relay and horn switch.

3) With horn relay removed, connect a fused jumper wire between Orange and Dark Green wire terminals at horn relay connector. If horns sound, replace horn relay. If horns do not sound, leave jumper wire connected and go to next step.

4) Check for battery voltage at Dark Green wire terminal of horn connectors. If no voltage is present, repair open in Dark Green wire. If battery voltage is present, check for open in horn ground (Black wire). If Black wire is okay, replace horn.

Horns Sound Continuously

1) Remove horn relay. See HORN RELAY LOCATION table. If horns stop sounding, go to next step. If horns continue to sound, repair short to battery in Dark Green wire between horn relay and horns.

2) With relay still removed, connect a test light between Orange (Orange/Black on some models) and Black wire terminals of horn relay connector. If test light is off, replace horn relay. If test light is on, repair short to ground in circuit between horn relay and horn switch.

Only One Horn Inoperative

Disconnect electrical connector from inoperative horn. Connect a test light to horn connector terminal "B" (Dark Green wire) and ground. Push horn button. If test light is off, check for open in Dark Green wire between horn relay and horn. If test light is on, check for poor connection at horn. If connection is okay, replace horn.

HORN RELAY LOCATION TABLE

Application	Location
Eldorado & Seville	On Left Side Of Engine Compartment, In Relay Block
Concours & DeVille	Behind Instrument Panel, In Convenience Center

COLUMN SWITCHES

NOTE: For wiring diagrams and switch testing procedures on cruise control, lighting, wiper/washer and other components, see appropriate article in ACCESSORIES & EQUIPMENT. Use the

following procedure to test components not covered.

Disconnect switch connector. Check continuity between appropriate terminals of switch connector according to selected switch position. If continuity is not correct for selected switch position, replace switch.

ADJUSTMENTS

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See the COMPUTER RELEARN PROCEDURES article in the GENERAL INFORMATION section before disconnecting battery.

NOTE: For exploded view of upper steering column, see Fig. 7.

COLUMN SHIFT INDICATOR

"T" Adjuster Type

1) Position shift lever in "N" position. Move "T" adjuster on left side of steering column to allow both dots above "N" position to be filled by position indicator.

2) Move shift lever through all positions, and back to "N" position to check adjustment. Verify flag fills window for each graphic, and does not show 2 gear positions at same time. See Fig. 1.

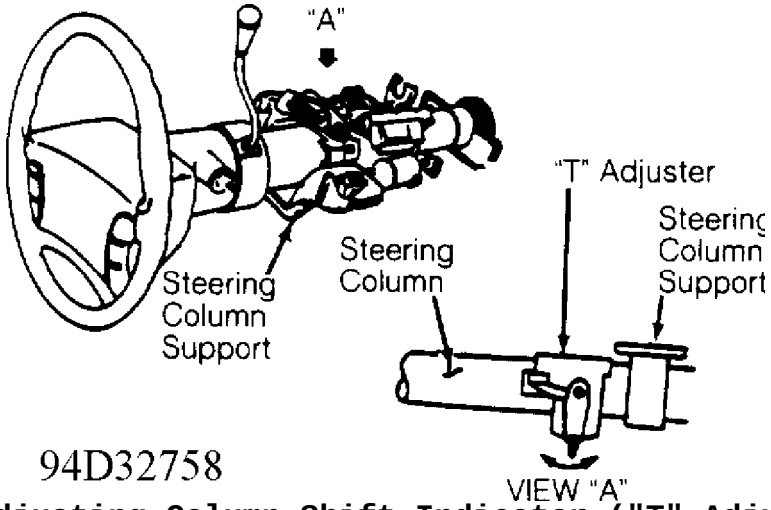


Fig. 1: Adjusting Column Shift Indicator ("T" Adjuster Type) Courtesy of General Motors Corp.

Guide Clip Type

1) Position shift lever in "N" position. Position guide clip on edge of shift bowl to central position pointer on "N" position. Push clip onto bowl. Care must be taken to position cable rests on

bowl and not on column jacket.

2) With gear selector in "N" position, "N" must be visible on both sides of pointer. Pointer must cover portions of "1" or be to right of "1" when transaxle is in "LOW" position. See Fig. 2.

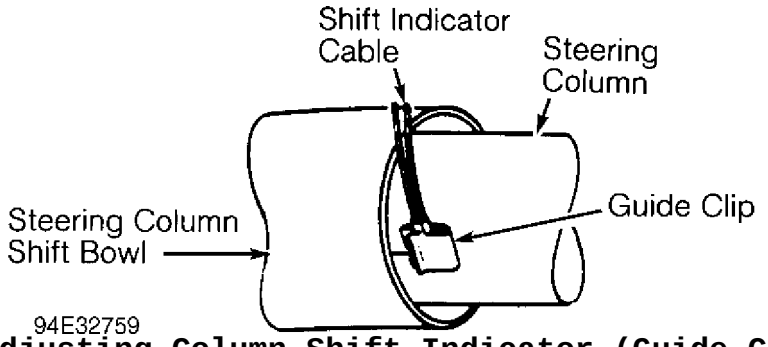


Fig. 2: Adjusting Column Shift Indicator (Guide Clip Type) Courtesy of General Motors Corp.

DIMMER SWITCH

1) With switch removed from column bracket, insert a 3/32" drill bit into adjusting pin hole to limit switch travel. See Fig. 3. Insert actuator rod into switch. Install switch to column bracket and finger-tighten screws.

2) Lightly push switch upward against actuator rod until no lash (free-play) exists between rod and switch. Tighten mounting screws to 35 INCH lbs. (4 N.m). Remove drill bit. Ensure proper switch operation using dimmer/headlight switch handle.

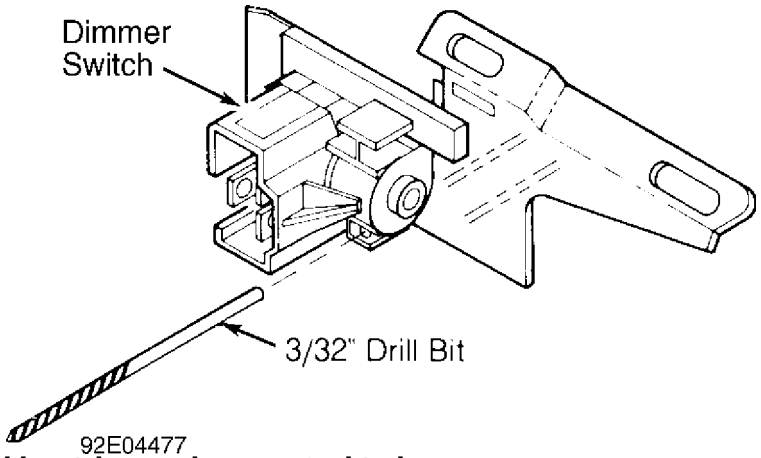


Fig. 3: Adjusting Dimmer Switch Courtesy of General Motors Corp.

HORN

Current draw for horns while operating is 4.5-5.5 amps at 11. 5-12.5 volts. High current (more that 20 amps) indicates an overheated

winding or shorted horn. If horn overheated because of winding or shorted, replace horn. Current reading of 18 amps indicates contact points are not opening. Adjust horn current.

No current reading indicates a broken connection, or an open circuit due to a broken lead or overheated horn. An overheated horn must be replaced. No current reading indicates contact points are open. Adjust horn.

To adjust horn (adjusting screw is located at rear of horn assembly):

- **Current adjustments should be made 1/4 turn (90ø) increments.**
- **Turn adjusting screw clockwise to increase current.**
- **Turn adjusting screw counterclockwise to decrease current.**

IGNITION SWITCH

CAUTION: New ignition switch is pinned in the OFF-LOCK position. Plastic pin must be removed before operating switch.

1) Set key lock cylinder in OFF-LOCK position. On fixed column, set ignition switch slider (where actuator rod connects to switch) to the OFF-LOCK position by moving slider to left as far as possible and then one detent to right. See Fig. 4.

2) On tilt column, set ignition switch slider (where actuator rod connects to switch) to OFF-LOCK position by moving slider to right as far as possible, and then one detent to left. See Fig. 4.

3) On all columns, install switch. Tighten switch screws to 35 INCH lbs. (4 N.m). Ensure ignition switch functions properly with lock cylinder in all positions.

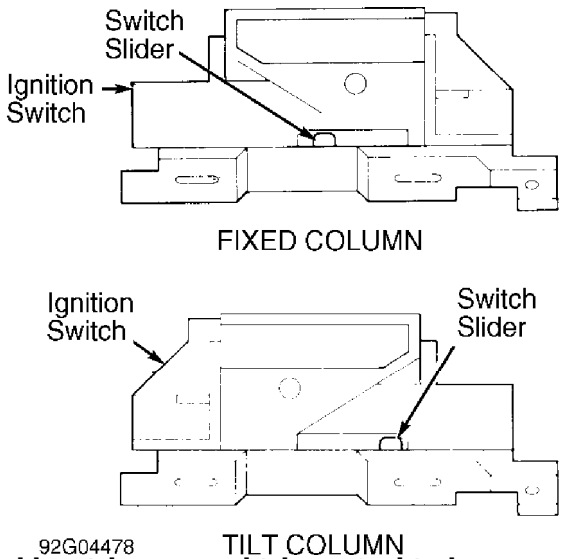


Fig. 4: Adjusting Ignition Switch
Courtesy of General Motors Corp.

PARK LOCK CABLE

NOTE: Lock cylinder MUST be in RUN position when park lock cable is removed from or inserted into ignition switch inhibitor.

1) Disconnect negative battery cable. Remove center console trim for access to base of shift lever. Place shift lever in Park. If park lock cable is not already inserted into ignition switch inhibitor, turn lock cylinder to RUN position and insert cable into inhibitor.

2) Unlock cable adjuster at base of shift lever by pressing locking button upward. Turn lock cylinder to LOCK position. Push cable connector nose forward to remove slack. With no load applied to cable connector nose, lock cable adjuster button by pressing locking button down. Install center console trim. Connect negative battery cable.

SIR COIL ASSEMBLY

NOTE: If the coil assembly hub or the steering shaft were rotated after the assembly was removed, use the following procedure to center the coil ribbon before installing assembly. A new coil ribbon does not require centering, as it is already centered and held in this position with a Blue plastic tab. Remove tab after coil assembly is installed.

1) Hold coil assembly with clear bottom upward to see coil ribbon. Note there are 2 different styles of coil assemblies: one rotates clockwise and other counterclockwise.

2) While holding coil assembly housing and pressing spring lock, rotate hub in direction of arrow (on bottom of assembly) until it stops. Coil assembly should now be wound up snug against center hub.

3) Rotate coil assembly hub in opposite direction about 2 1/2 turns. Release spring lock between locking tabs in front of arrow. Coil assembly can now be installed if front wheels are in straight-ahead position.

SOLENOID & INTERLOCK ASSEMBLY (IN-VEHICLE)

1) Disable air bag restraint system. See the DISABLING & ACTIVATING AIR BAG SYSTEM procedures. Disconnect negative battery cable.

2) Ensure shift cable is installed with no tension or kinks onto shift tube lever. Ensure ignition switch is in OFF position. Place transmission selector in "N" position.

3) Unlock shift cable at transmission shift arm to eliminate shift cable tension. Lock shift cable. Move shift lever to "P" position. Ensure transmission linkage is correctly adjusted and fully engaged in "P" position.

4) Loosen 2 bolts and move solenoid and interlock assembly 1/8" (3.2 mm) toward steering column. Retighten bolts. Activate air bag system. See Fig. 5.

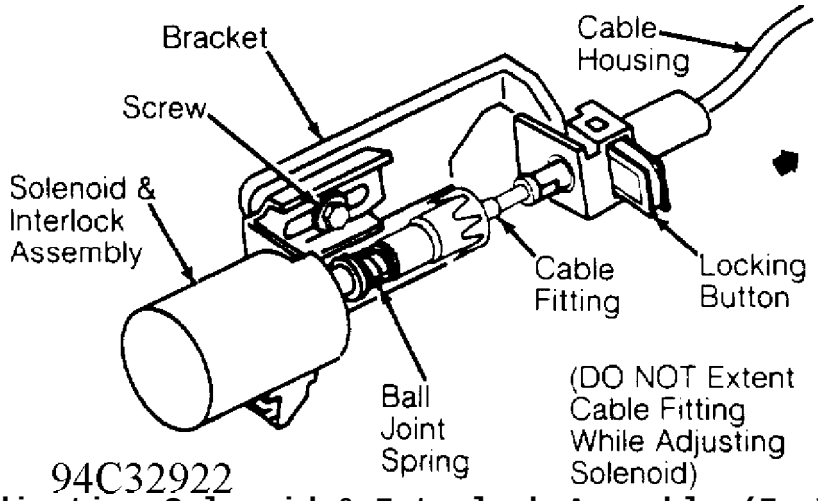


Fig. 5: Adjusting Solenoid & Interlock Assembly (In-Vehicle) Courtesy of General Motors Corp.

SOLENOID & INTERLOCK ASSEMBLY (OFF-VEHICLE)

1) With steering column removed from vehicle, place ignition switch in LOCK position to prevent SIR coil assembly from becoming off centered. Position shift tube in Park position. Hold interlock lever and bumper down against lower shift tube lever pin.

2) Measure clearance between lower shift tube lever pin and interlock and bumper lever assembly contact. See Fig. 6. Loosen 2 solenoid adjustment bolts. Slide interlock and bumper assembly to obtain 0.22-0.32" (5.6-8.0 mm) clearance. Tighten 2 solenoid adjustment bolts evenly to 12 ft. lbs. (16 N.m).

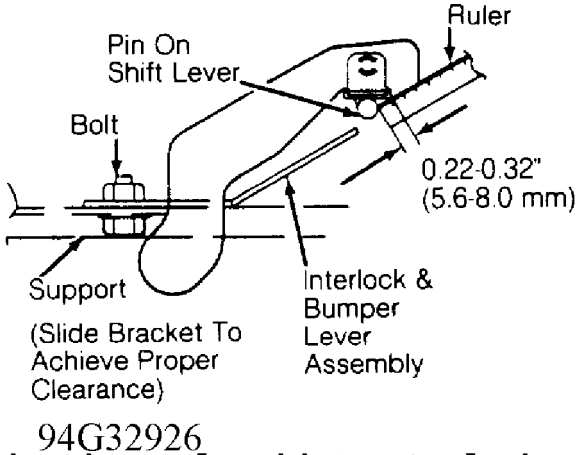


Fig. 6: Adjusting Solenoid & Interlock Assembly (Off-Vehicle) Courtesy of General Motors Corp.

REMOVAL & INSTALLATION

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See the COMPUTER RELEARN PROCEDURES article in the GENERAL INFORMATION section before disconnecting battery.

AIR BAG (INFLATOR) MODULE

Removal (Driver-Side)

1) Before proceeding, follow air bag service precautions. See SERVICE PRECAUTIONS. Disable air bag system. See the DISABLING & ACTIVATING AIR BAG SYSTEM procedures.

2) Remove screws and nuts from underside of steering wheel. Partially remove inflator module and disconnect steering wheel inflator module connector, CPA clip and disconnect horn contact from inflator. Remove radio control switch connector, if equipped. Remove inflator module.

Installation

1) Install horn contact, steering wheel inflator module connector and CPA clip. Install inflator module to steering wheel. Tighten inflator module screws to proper specification. See TORQUE SPECIFICATIONS.

2) To complete installation, reverse removal procedure. Reactivate air bag system. See DISABLING & ACTIVATING AIR BAG SYSTEM.

STEERING WHEEL

Removal & Installation

1) Set front wheels in straight-ahead position. Turn ignition switch to LOCK position. Remove air bag module. See AIR BAG (INFLATOR) MODULE.

2) Mark steering wheel hub in relation to steering shaft for installation reference. Remove steering wheel nut. Using appropriate steering wheel puller, remove steering wheel. See the STEERING WHEEL PULLER SPECIFICATIONS table. DO NOT install puller bolts too deeply into hub, as SIR coil assembly will be damaged.

3) To install, reverse removal procedure. Align marks on steering wheel hub and steering shaft before installing steering wheel. Tighten steering wheel nut to 30 ft. lbs. (41 N.m). Activate SIR system. See DISABLING & ACTIVATING AIR BAG SYSTEM.

STEERING WHEEL PULLER SPECIFICATIONS TABLE

Application	Tool (Part No.)

"E" & "K" Body ..... Puller (J-1859-03) & Screws (J-38720)

SIR COIL ASSEMBLY

NOTE: Front wheels of vehicle must be turned to straight-ahead position before beginning service. Failure to do so can result in coil assembly being removed without being centered. Reinstalling coil assembly under such circumstances causes ribbon in coil assembly to break when steering wheel is turned fully. Ensure key is always in LOCK position to prevent wheel from turning and uncentering coil assembly. To recenter coil assembly, see ADJUSTMENTS.

Removal

1) Before proceeding, follow air bag service precautions. See SERVICE PRECAUTIONS. Disable air bag system. See DISABLING & ACTIVATING AIR BAG SYSTEM.

2) Remove inflator module. See AIR BAG (INFLATOR) MODULE. Remove horn contact wire from steering column. Remove steering wheel. See STEERING WHEEL. DO NOT install puller bolts too far, as damage to coil assembly can result.

3) Remove coil assembly retaining ring from steering shaft. Grasp clear plastic wire protector shield on underside of steering column, and slide downward. Partially remove coil assembly from end of steering wheel shaft and allow coil to hang freely. Note orientation to steering column housing before removal.

4) Remove wave washer from steering shaft. Using Shaft Lock Remover (J-23653-C), depress shaft lock and remove shaft lock retaining ring. Remove shaft lock plate and upper bearing spring. Remove turn signal canceling cam.

5) Remove hazard knob and attaching screw. Remove turn signal switch arm. Remove 3 turn signal switch screws and partially withdraw switch. Disconnect any remaining electrical connectors. Attach mechanics wire to coil assembly lower connector (at base of steering column) and carefully pull wire through gear shift lever bowl, column housing and lock housing cover.

Installation

1) Carefully feed coil assembly wire and lower connector through lock housing cover, column housing and gear shift lever bowl and allow coil assembly to hang freely.

NOTE: Use care not to pinch wires when installing components. After wire is fed through, attach CAUTION tag to wire near connector at base of steering column. Tag is included in coil assembly repair kit.

2) Install turn signal switch and torque screws to 30 INCH lbs. (3.4 N.m). Install turn signal switch arm and torque attaching screw to 20 INCH lbs. (2.3 N.m).

3) Install hazard knob and attaching screw. Install turn signal canceling cam and shaft lock plate. Install shaft lock retaining ring. Using lock plate compressor, align block tooth on shaft, and depress shaft lock plate. Install wave washer.

4) Ensure coil assembly hub and steering shaft are centered. Coil assembly will become uncentered if column is separated from steering gear and is allowed to rotate, or if centering spring is depressed, allowing hub to rotate while coil assembly is removed from column.

5) Install coil assembly, using horn tower on canceling cam to align hole on inner ring of coil and projections on steering column housing with projections on outer ring of coil. To complete installation, reverse removal procedure. Reactivate air bag system. See DISABLING & ACTIVATING AIR BAG SYSTEM.

TURN SIGNAL SWITCH

Removal & Installation

1) Remove steering wheel and SIR coil spring (if equipped). See STEERING WHEEL and SIR COIL ASSEMBLY. Remove steering shaft lock plate retaining ring using Shaft Lock Remover (J-23653-C) and small tip screwdriver or scribe. Remove shaft lock plate.

2) Remove turn signal cancel cam and upper bearing spring. Remove screw retaining hazard flasher knob assembly. Remove lower instrument panel and steering column covers. Disconnect turn signal switch harness connector from column.

3) Tie mechanics wire to turn signal switch harness connector to ease installation of turn signal switch harness connector down through column. Remove turn signal switch from steering shaft while pulling harness up through column. To install, reverse removal procedure.

LOCK CYLINDER

Removal & Installation

Remove turn signal switch. See TURN SIGNAL SWITCH. With ignition key removed, remove buzzer switch. Insert key into lock cylinder. Turn lock cylinder to LOCK position. Remove lock cylinder retaining screw. Remove lock cylinder. To install, reverse removal procedure.

DIMMER SWITCH

Removal

Disconnect negative battery cable. Remove trim panel(s) from base of column as necessary to access the dimmer switch. Disconnect

electrical connector from dimmer switch. Remove dimmer switch from actuator rod.

Installation

Install and adjust dimmer switch using adjustment procedure. See DIMMER SWITCH under ADJUSTMENTS. To install remaining components, reverse removal procedure.

IGNITION SWITCH

Removal

Disconnect negative battery cable. Remove trim panel(s) from base of column as necessary to access the ignition switch. Remove dimmer switch, if necessary. Disconnect electrical connector from ignition switch. Remove ignition switch from actuator rod.

Installation

Install and adjust ignition switch using adjustment procedure. See IGNITION SWITCH under ADJUSTMENTS. If dimmer switch was removed, install and adjust dimmer switch using adjustment procedure. See DIMMER SWITCH under ADJUSTMENTS. To install remaining components, reverse removal procedure.

LOCK HOUSING

NOTE: Lock housing may also be referred to as main steering column housing.

Removal & Installation

1) Remove steering wheel, SIR coil assembly, turn signal switch and lock cylinder. Remove dimmer and ignition switches. Remove cover from lock housing. Disconnect cruise control switch connector (if equipped) near multifunction switch.

2) Disconnect multifunction switch connector. Set multifunction switch lever in OFF position (centered), grasp lever and pull straight out to remove. Remove lock housing screws. Remove lock housing. To install, reverse removal procedure.

MULTIFUNCTION SWITCH

NOTE: Multifunction switch incorporates wiper/washer switch and acts as mechanical link to the turn signal switch and headlight dimmer switch. Also, cruise control switch (if equipped) is on end of multifunction switch lever. Manufacturer's procedure requires that the lock housing be removed to remove switch.

Removal & Installation

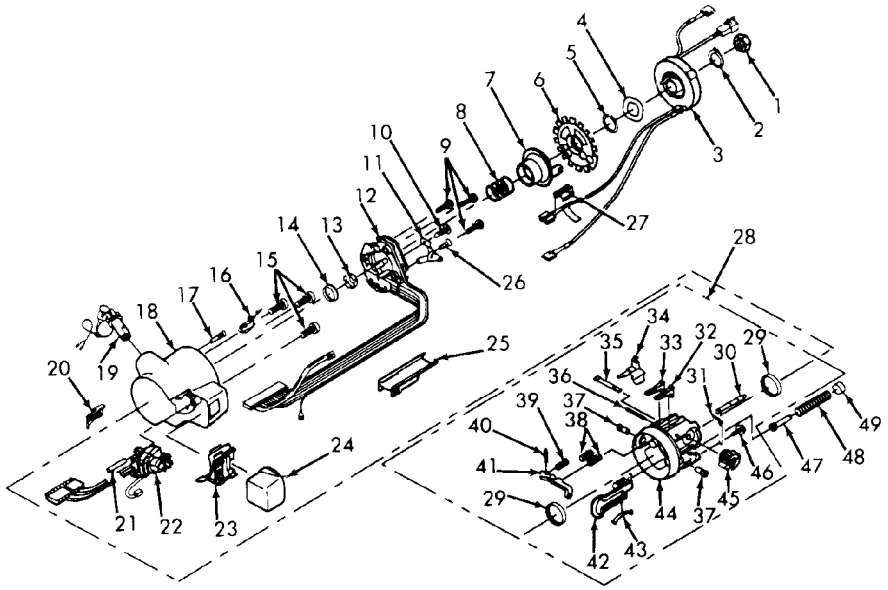
Remove lock housing. See LOCK HOUSING. Remove multifunctio

switch actuator pivot pin. Remove multifunction switch. To install, reverse removal procedure.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Steering Wheel Nut	30 (41)
	INCH Lbs. (N.m)
Dimmer Switch Screws	35 (4)
Ignition Switch Screws	35 (4)
Inflator Module Nut/Screw (Driver Side)	27 (3)
Lock Cylinder Screws	22 (2.5)
Multifunction Switch Arm Screws	19 (2.2)
Multifunction Switch Screws	27 (3.1)



1. Nut
2. Retaining Ring
3. SIR Coil Assembly
4. Wave Washer
5. Retaining Ring
6. Shaft Lock
7. Turn Signal Cancel Cam
8. Spring
9. Screw
10. Screw
11. Turn Signal Switch Arm
12. Turn Signal Switch
13. Seat
14. Inner Race
15. Screw
16. Buzzer Switch
17. Screw
18. Lock Housing Cover
19. Lock Cylinder
20. Dimmer Switch Rod Actuator
21. Pivot Pin
22. Pivot & Pulse Switch
23. Base Plate
24. Cover End Cap
25. Wiring Protector
26. Screw
27. Connector Shroud
28. Housing
29. Bearing Assembly
30. Lock Bolt
31. Spring
32. Lock Shoe
33. Lock Shoe
34. Protector Shield
35. Drive Shaft
36. Dowel Pin
37. Pivot Pin
38. Shoe Spring
39. Lever Spring
40. Lever Pin
41. Release Lever
42. Actuator Rack
43. Preload Spring
44. Housing
45. Actuator Sector
46. Screw
47. Spring Guide
48. Tilt Wheel Spring
49. Spring Retainer

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Fig. 7: Exploded View Of Upper Steering Column
Courtesy of General Motors Corp.

WIRING DIAGRAMS

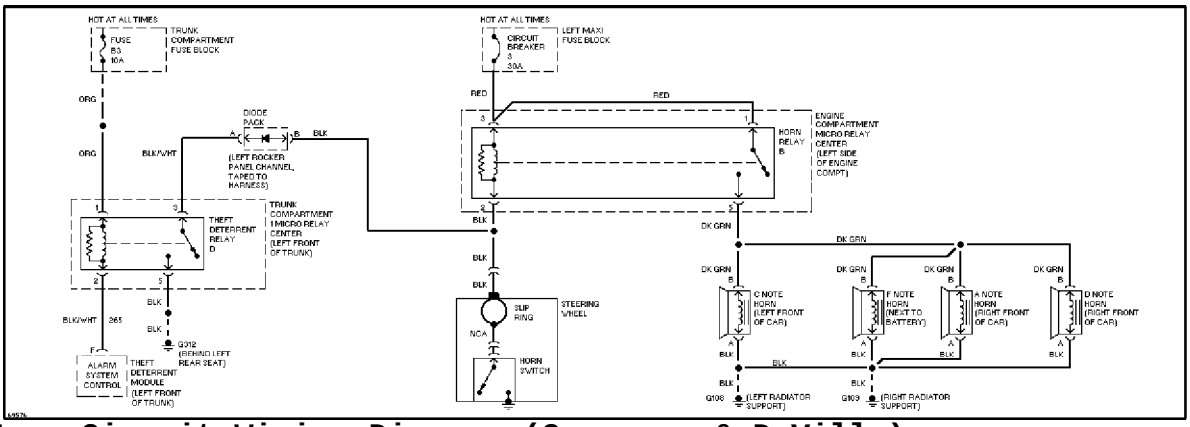

Fig. 8: Horn Circuit Wiring Diagram (Concours & DeVille)

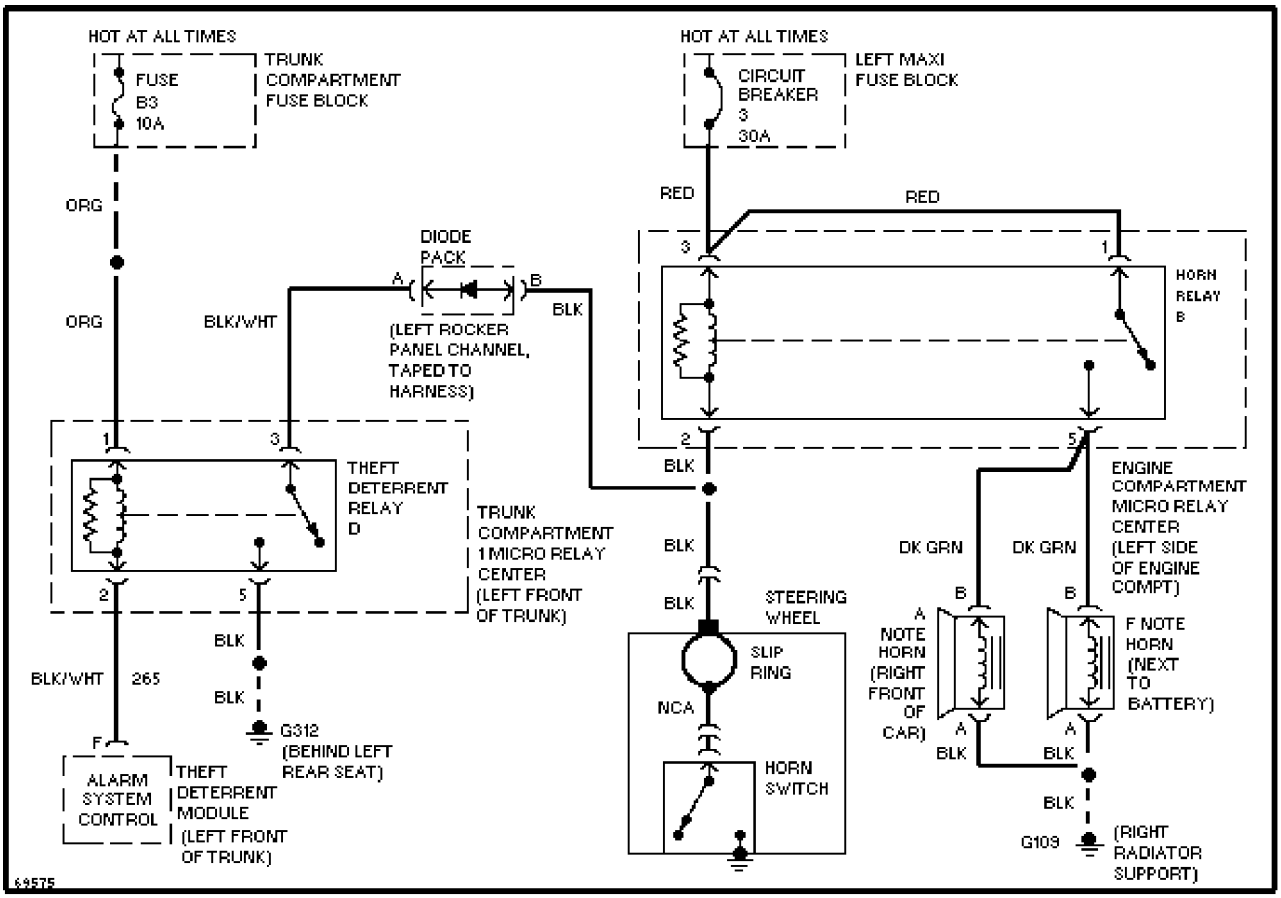

Fig. 9: Horn Circuit Wiring Diagram (Eldorado & Seville)

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