SECTION 3F5A

SUPPLEMENTAL INFLATABLE RESTRAINT (SIR) TILT STEERING COLUMN COLUMN SHIFT UNIT REPAIR

CAUTION: The procedures in this section must be followed in the order listed to temporarily disable the Supplemental Inflatable Restraint (SIR) System and prevent false diagnostic codes from setting. Fallure to follow procedures could result in possible air bag deployment, personal injury, or otherwise unneeded SIR system repairs.

CAUTION: Before removing or installing any electrical unit or when a tool or equipment could easily come in contact with "live" exposed electrical terminals, disconnect the negative battery cable to help prevent personal injury and/or damage to the vehicle or components. Unless instructed otherwise, the ignition switch must be in the "off" or "lock" position.

NOTICE: When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. If the correct part number fastener is not available, a fastener of equal size and strength (or stronger) may be used. Fasteners that are not reused, and those requiring thread locking compound will be called out. The correct torque value must be used when installing fasteners that require it. If the above conditions are not followed, parts or system damage could result.

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3F-B-RP

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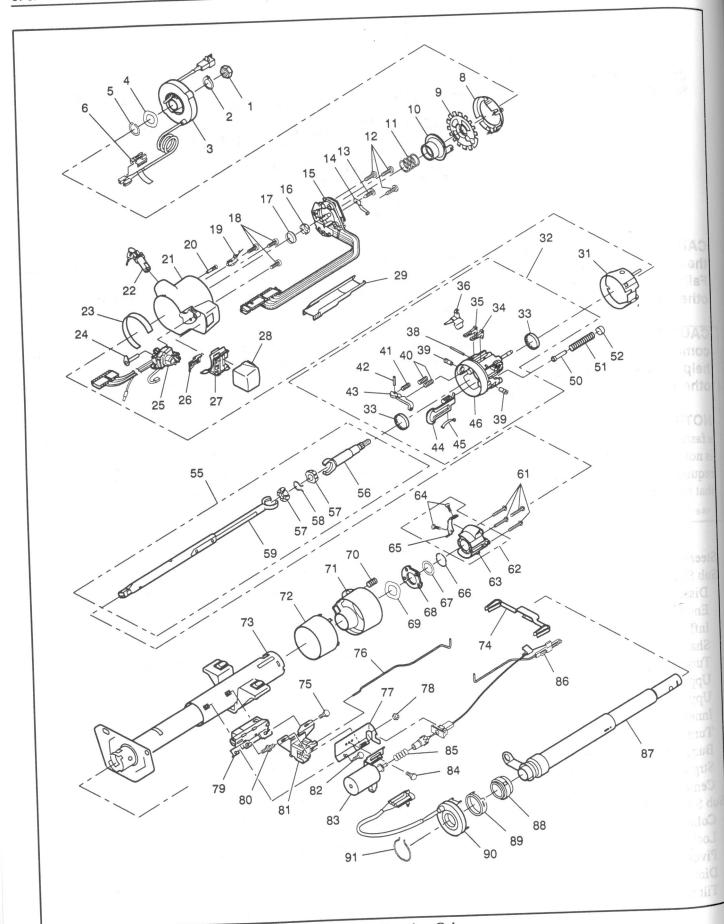


Figure 1 - Tilt Steering Column

- 1- NUT, HEX LOCKING (M14x1.5)
- 2- RING, RETAINING
- 3- COIL ASM, INFL RESTRAINT
- 4- WASHER, WAVE
- 5- RING, RETAINING
- 6- SHROUD, CONNECTOR
- 8- GUARD, LOCK BOLT
- 9- LOCK, SHAFT
- 10- CAM ASM, TURN SIG CANCEL
- 11- SPRING, UPPER BEARING
- 12- SCREW, BNDG HD CR RECESS
- 13- SCREW, FLAT HD TAP
- 14- ARM, SIGNAL SWITCH
- 15- SWITCH ASM, TURN SIGNAL
- 16- SEAT, UPPER BRG INNER RACE
- 17- RACE, INNER
- 18- SCREW, PAN HD SOC TAP
- 19- SWITCH ASM, BUZZER
- 20- SCREW, LOCK RETAINING
- 21- COVER ASM, LOCK HOUSING
- 22- LOCK CYLINDER SET, STRG COL
- 23- RING, COVER TRIM
- 24- PIN, SWITCH ACTUATOR PIVOT
- 25- SWITCH ASM, PIVOT & (PULSE)
- 26- ACTUATOR, DIMMER SW ROD
- 27- BASE PLATE, COL HSG CVR END
- 28- CAP, COL HSG COVER END
- 29- PROTECTOR, WIRING
- 31- COVER LINER ASM, PIN &
- 32- HOUSING ASM, STRG COLUMN
- 33- BEARING ASM
- 34- SHOE, STEERING WHEEL LOCK
- 35- SHOE, STEERING WHEEL LOCK
- 36- SHIELD, WIRE PROTECTOR
- 38- PIN, DOWEL
- 39- PIN, PIVOT
- 40- SPRING, SHOE
- 41- SPRING, RELEASE LEVER
- 42- PIN, RELEASE LEVER
- 43- LEVER, SHOE RELEASE
- 44- RACK, SWITCH ACTUATOR
- 45- SPRING, RACK PRELOAD
- 46- HOUSING, STRG COLUMN
- 50- GUIDE, SPRING
- 51- SPRING, WHEEL TILT
- 52- RETAINER, SPRING
- 55- SHAFT ASM, STEERING
- 56- SHAFT ASM, RACE & UPPER
- 57- SPHERE, CENTERING

- 58- SPRING, JOINT PRELOAD
- 59- SHAFT ASM, LOWER STEERING
 - 61- SCREW, SUPPORT
 - 62- SUPPORT ASM, STRG COL HSG
 - 63- SUPPORT, STRG COL HSG
 - 64- SCREW, OVL HD CROSS RECESS
- 65- GATE, SHIFT LEVER
- 66- RING, SHIFT TUBE RETAINING
- 67- WASHER, THRUST
- 68- PLATE, LOCK
- 69- WASHER, WAVE
- 70- SPRING, SHIFT LEVER
- 71- BOWL ASM, GEARSHIFT LEVER
- 72- SHROUD, GEARSHIFT BOWL
- 73- JACKET ASM, STRG COL
- 74- RETAINER, CABLE
- 75- SCREW, WASH HD (#10-24x.25)
- 76- ROD, DIMMER SWITCH
- 77- BRACKET, SOLENOID
- 78- NUT, HEX (#10-24)
- 79- SWITCH ASM, IGNITION
- 80- STUD, DIMR & IGN SWITCH MOUNT
- 81- SWITCH ASM, DIMMER
- 82- SCREW, HEX WASH HD TAP
- 83- SOLENOID ASM, INTERLOCK
- 84- SCREW, HEX WASH HD
- 85- SPRING, BALL JOINT
- 86- ACTUATOR ASM, IGN SWITCH
- 87- TUBE ASM, SHIFT
- 88- BUSHING ASM, STRG SHAFT
- 89- RETAINER, BEARING ADAPTER
- 90- SENSOR ASM, ATTACHMENT PLATE &
- 91- CLIP, LOWER BEARING ADAPTER

Service Kits

- 201- RACK SERV KIT, COL SECTOR & -INCLUDES: 17,33,44
- 202- SPRING SERV KIT, TILT COLUMN -INCLUDES: 16,17,39,50,51,52
- 203- COIL SERV KIT, INFL RESTRAINT -INCLUDES: 3,6
- 204- SPHERE SERV KIT, TILT COLUMN -INCLUDES: 57,58
 - 205- GREASE SERV KIT, (SYNTHETIC)

SUB SECTION A - UPPER COLUMN

INCLUDES:

DISABLING THE SIR SYSTEM
ENABLING THE SIR SYSTEM
INFLATABLE RESTRAINT COIL ASSEMBLY
SHAFT LOCK
TURN SIGNAL CANCELLING CAM ASM
UPPER BEARING SPRING
UPPER BEARING INNER RACE SEAT
INNER RACE
TURN SIGNAL SWITCH ASSEMBLY
BUZZER SWITCH ASSEMBLY
STRG COL LOCK CYLINDER SET
CENTERING INFL RESTRAINT COIL

Tools Required:
J 23653-C Lock Plate Compressor

SERVICE PRECAUTIONS

CAUTION: When performing service on or around SIR components or wiring, follow the procedures listed below to temporarily disable the SIR system. Failure to follow procedures could result in possible air bag deployment, personal injury or otherwise unneeded SIR repairs.

The DERM can maintain sufficient voltage to cause a deployment for up to 10 minutes after the "Ignition Switch" is turned off and the battery is disconnected. Many of the service procedures require disconnection of the "AIR BAG" fuse and Inflator Module from the deployment loop to avoid an accidental deployment.

Disabling The SIR System

Remove or Disconnect

- Turn ignition switch "OFF".
- 1. "AIR BAG" Fuse.
- 2. Lower trim panel LH. Refer to INSTRUMENT PANEL, GAGES AND CONSOLE (SECTION 8C).
- 3. Connector Position Assurance (CPA) and yellow two-way SIR connector at the base of the steering column.

Enabling The SIR System

++ Install or Connect

- Turn ignition switch "OFF".
- 1. Yellow two-way SIR connector and Connector Position Assurance (CPA) at the base of the steering column.
- 2. "AIR BAG" Fuse.
- 3. Lower trim panel LH. Refer to INSTRUMENT PANEL, GAGES AND CONSOLE (SECTION 8C).
 - TURN IGNITION SWITCH TO "RUN" and make sure "INFL REST" warning lamp flashes
 7 to 9 times and then remains "OFF".

If it does not operate as described, perform the "SIR Diagnostic System Check" in SIR SYSTEM DIAGNOSIS (SECTION 9J-A).

| Important

 Before doing any service procedures in this section, disabling the SIR system and removal of Inflator Module and Steering Wheel is needed. (Refer to "Disabling The SIR System" in this section and service procedures in Section 3F)

Remove or Disconnect Figures 1 through 9 and 12

NOTICE: Place ignition to "LOCK" position to prevent uncentering coil assembly (3).

- Disable the SIR system; refer to "Disabling The SIR System" in this Section.
- 2. Negative (-) battery cable.

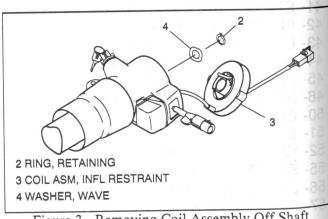


Figure 3 - Removing Coil Assembly Off Shaft

- 3 Coil assembly retaining ring (2).
- 4. Inflatable Restraint Coil assembly (3).
 - Let switch hang freely if removal is not needed.
 - To remove coil assembly (3), do steps 5 through 18 in this section.
- 5. Wave washer (4).

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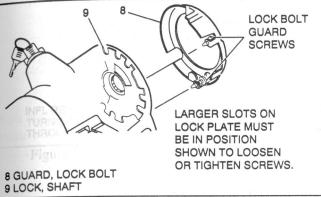


Figure 4 - Removing Lock Bolt Guard

NOTICE: SIR coil assembly wires must be kept tight with no slack while rotating shaft lock (9). Failure to do so may cause wires to be kinked near shaft lock area and cut when rotating steering shaft.

- 6. Lock bolt guard (8). (See Figure 4)
 - A. Place ignition switch to "RUN" position.
 - B. Rotate shaft (55) until blocking tooth is at 7 o'clock position and bolt guard screws are accessible through large slots on lock shaft (9).
 - C. Loosen screws on lock bolt guard (8) until guard can be removed.
 - D. Place ignition switch to "LOCK" position.

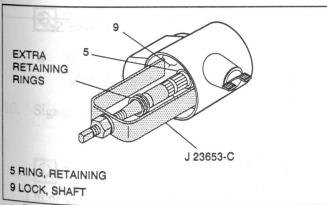


Figure 5 - Removing Shaft Lock Retaining Ring

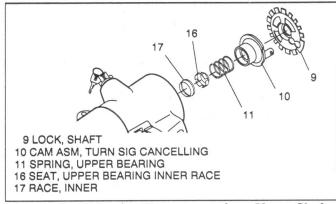


Figure 6 - Removing Components from Upper Shaft

- 7. Shaft lock retaining ring (5) using J 23653-C to push down shaft lock (9).
 - Dispose of ring (5).
- 8. Shaft lock (9).
- 9. Turn signal cancelling cam assembly (10).
- 10. Upper bearing spring (11).
- 11. Upper bearing inner race seat (16).
- 12. Inner race (17).
- 13. Turn signal to "RIGHT TURN" position (up).
- 14. Multi-function lever and hazard knob assembly. (See Section 3F)
- 15. Screw (13) and signal switch arm (14).
- 16. Turn signal switch screws (12).

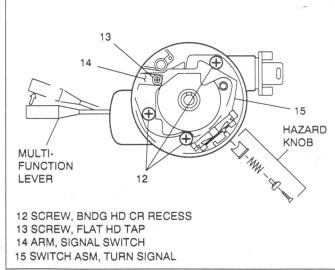


Figure 7 - Turn Signal Switch Removal Preparation

- 17. Turn signal switch assembly (15).
 - Let switch hang freely if removal is not needed.
 - To remove switch (15):
 - A. Turn signal switch connector from vehicle wire harness.
 - B. Wiring protector (29).
 - C. Gently pull wire harness through column.

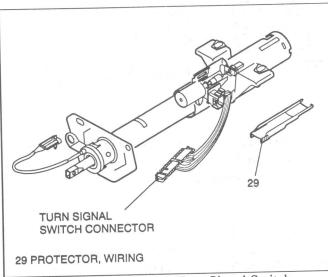


Figure 8 - Removing Turn Signal Switch

NOTICE: Coil assembly (3) will become uncentered if:

- 1) Steering column is separated from steering gear and is allowed to rotate, or
- 2) Centering spring is pushed down, letting hub rotate while coil (3) is removed from steering column. (If this occurs, see Figure 12)

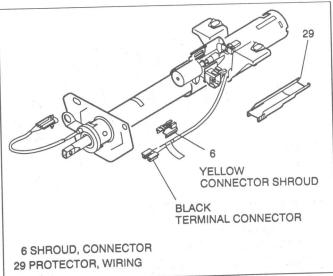


Figure 9 - Removing Coil Assembly Switch

- 18. Inflatable restraint coil assembly (3) with wire harness from column assembly.
 - A. Wiring protector (29).
 - B. Attach a length of mechanics wire to terminal connector harness to aid in reassembly.
 - C. Gently pull wire through column.
- 19. Key from lock cylinder set (22).
- 20. Buzzer switch assembly (19).
- 21. Reinsert key in lock cylinder (22).
 - Key in "LOCK" position.
- 22. Lock retaining screw (20).
- 23. Lock cylinder (22).



NOTICE: See "Notice" on page 3F5A-1 of this section.

NOTICE: Ensure all fasteners are securely seated before applying needed torque. Failure to do may result in component damage or malfunctioning of steering column.

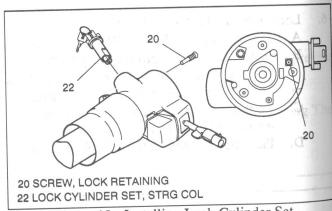


Figure 10 - Installing Lock Cylinder Set

- 1. Steering column lock cylinder set (22).
- 2. Lock retaining screw (20).

হ্ম Tighten

• Tighten screw (20) to 2.5 N·m (22 lb.in.).

- 3. Key from lock cylinder set (22).
- Buzzer switch assembly (19).

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5 Reinsert key in lock cylinder set (22).

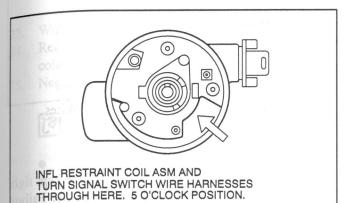


Figure 11 - Wire Harnesses through Column

- 6. Key in "ON" position.
 - Shift column out of "PARK" position.
- 7. Turn signal switch assembly (15) wire harness through steering column.
 - Let switch hang freely.
 - Switch connector to vehicle wire harness.
 - Shift column to "PARK" position.
- 8. Coil assembly (3) wire harness through column. (See Figure 13)
 - Let coil hang freely.
- 9. Turn signal switch assembly (15) and screws (12).

হ্ম Tighten

- Tighten screws (12) to 3.4 N·m (30 lb.in.).
- 10. Signal switch arm (14) with screw (13).

হ্ম Tighten

• Tighten screw (13) to 2.3 N·m (20 lb.in.).

- 11. Hazard knob assembly and multi-function lever. (See Section 3F)
- 12. Inner race (17).
- 13. Upper bearing inner race seat (16).
- 14. Upper bearing spring (11).
- 15. Turn signal cancelling cam assembly (10).
 - Lubricate with grease, synthetic (service kit).
- 16. Shaft lock (9).
- 17. New shaft lock retaining ring (5) using J 23653-C to push down shaft lock (9).
 - Ring (5) must be firmly seated in groove on shaft.

NOTICE: SIR coil assembly wires must be kept tight with no slack while rotating shaft lock (9). Failure to do so may cause wires to be kinked near shaft lock area and cut when rotating steering shaft.

- 18. Lock bolt guard (8). (See Figure 4)
 - A. Place ignition switch to "RUN" position.
 - B. Rotate shaft (55) until block tooth is at 7 o'clock position and bolt guard screw holes are accessible through large slots on lock shaft (9).
 - C. Tighten screws on lock bolt guard (8) until screw heads bottom out.

1 Tighten

• Tighten two bolts to 2.3 N·m (20 lb.in.).

Inspect

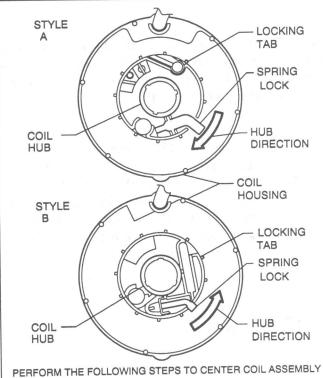
- Hold cable wires down and away from shaft lock and rotate shaft lock (9).
- Shaft lock (9) must not bind on guard screws or tabs on bolt guard (8).

NOTICE: Set steering shaft so that block tooth on upper steering shaft (56) is at the 12 o'clock position, wheels on vehicle should be straight ahead, then set ignition switch to "LOCK" position, to ensure no damage to coil assembly (3). (Refer to Figure 25)

19. Wave washer (4).

NOTICE: Coil assembly (3) will become uncentered if:

- Steering column is separated from steering gear and is allowed to rotate, or
- Centering spring is pushed down, letting hub rotate while coil is removed from column. (If this occurs, see Figure 12)



- A WHEELS STRAIGHT AHEAD.
- B REMOVE COIL ASSEMBLY.
- C HOLD COIL ASSEMBLY WITH CLEAR BOTTOM UP TO SEE COIL
- D NOTE: THERE ARE TWO DIFFERENT STYLES OF COILS. ONE ROTATES CLOCKWISE AND THE OTHER ROTATES COUNTER-CLOCKWISE.
- E WHILE HOLDING COIL ASSEMBLY, DEPRESS SPRING LOCK TO ROTATE HUB IN DIRECTION OF ARROW UNTIL IT STOPS.
- F THE COIL RIBBON SHOULD BE WOUND UP SNUG AGAINST CENTER HUB.
- G ROTATE COIL HUB IN OPPOSITE DIRECTION APPROXIMATELY TWO AND A HALF (2-1/2) TURNS. RELEASE SPRING LOCK BETWEEN LOCKING TABS IN FRONT OF ARROW.

Figure 12 - Centering Coil Assembly

NOTICE: If a new coil assembly (3) is being installed, assemble pre-centered coil assembly (3) to steering column. Remove centering tab and dispose. (See Figure 12)

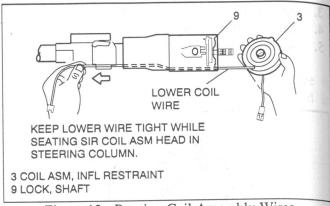


Figure 13 - Routing Coil Assembly Wires

NOTICE: SIR coil assembly wires must be kept tight with no slack while installing SIR coil assembly. Failure to do so may cause wires to be kinked near shaft lock area and cut when steering wheel is turned.

- 20. Ensure coil assembly (3) hub is centered.
- 21. Coil assembly (3).
 - A. Pull wire tight while positioning SIR coil to steering shaft. (See Figure 13)
 - Align opening in coil with horn tower and "locating bump" between two tabs on housing cover. (See Figure 14)
 - Seat coil assembly into steering column.

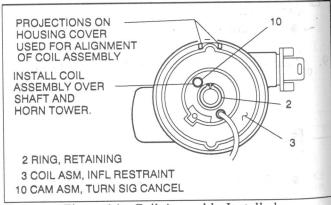


Figure 14 - Coil Assembly Installed

- 22. Coil assembly retaining ring (2).
 - Ring (2) must be firmly seated in groove on shaft.

NOTICE: Gently pull lower coil assembly, pivot & (pulse) switch and turn signal wires to remove any wire kinks that may be inside steering column assembly. Failure to do so may cause damage to wire harness.

- 23. Wiring protector (29).
- Refer to Section 3F to complete remaining steering column assembly.
- 25. Negative (-) battery cable.

18 Inspect

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- Function check turn signal switch (15).
- Position switch lever to right turn position.
 Turn steering wheel to left. Switch should cancel to center position.
- Repeat above procedure for left turn position.
- If turn signal switch (15) for broken or missing cancel spring, or a worn or damaged cancelling cam (5).
- 26. If all service operations are completed, enable the SIR system; refer to "Enabling The SIR System" in this Section.

SUB SECTION B - HOUSING COVER Figures 1,2,15 through 19

INCLUDES:

COL HSG COVER END CAP LOCK HOUSING COVER ASSEMBLY PIVOT & (PULSE) SWITCH ASSEMBLY DIMMER SWITCH ROD ACTUATOR TILT SPRING ASSEMBLY

Tools Required:
J 23653-C Lock Plate Compressor

? Important

 Before doing any service procedures in this section, removal of Inflator Module and Steering Wheel is needed. (Refer to service procedures in Section 3F)

| Important

 Remove only those components necessary to do repairs.

←→ Remove or Disconnect

- 1. Do all steps, "Remove or Disconnect", Sub Section A.
- 2. Housing cover end cap (28).

| Important

- Remove cruise control and multi-function lever connectors from base plate (27) and disconnect.
- Remove multi-function lever. (See Section 3F)

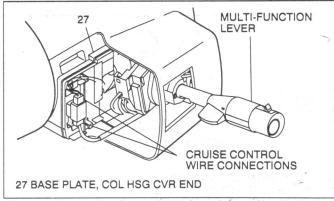


Figure 15 - Cruise Control Equipped Steering Columns

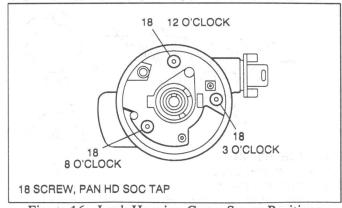


Figure 16 - Lock Housing Cover Screw Positions

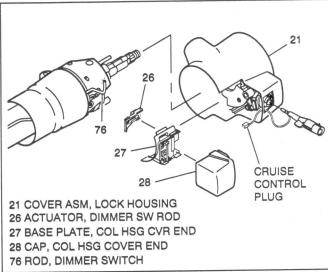


Figure 17 - Removing Lock Housing Cover

- 3. Cover screws (18).
- 4. Tilt lever. (See Section 3F)
- 5. Lock housing cover assembly (21).
- 6. Base plate (27) and dimmer switch rod actuator (26).

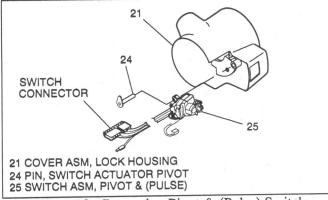


Figure 18 - Removing Pivot & (Pulse) Switch

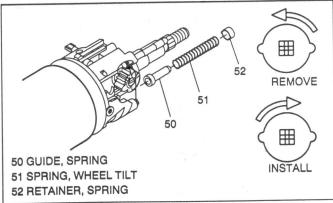


Figure 19 - Removing Tilt Spring Assembly

- 7. Switch actuator pivot pin (24).
- 8. Pivot & (pulse) switch assembly (25).
 - Let switch hang freely if removal is not needed
 - To remove switch (25):
 - A. Pivot & (pulse) switch connector from vehicle wire harness.
 - B. Gently pull wire harness through column.
- 9. Pin & cover liner assembly (31).
- 10. Wire protector shield (36).
- 11. Cover trim ring (23).
- 12. Spring retainer (52).
 - Using a cross recess head screwdriver, push retainer down and turn counterclockwise to release.
- 13. Spring (51) and spring guide (50).

++ Install or Connect

NOTICE: See "Notice" on page 3F5A-1 of this section.

NOTICE: Ensure all fasteners are securely seated before applying needed torque. Failure to do so may result in component damage or malfunctioning of steering column.

- 1. Spring guide (50) and spring (51).
 - Lubricate with lithium grease.
- 2. Spring retainer (52).
 - Using a cross recess screwdriver push retainer down and turn clockwise to lock in place.
- 3. Cover trim ring (23).
- 4. Wire protector shield (36).
- 5. Pin & cover liner assembly (31).
 - Tape edge as shown in Figure 21.
- 6. Pivot & (pulse) switch assembly (25) to lock housing cover assembly (21).
- 7. Switch actuator pivot pin (24) to switch (25) and cover (21).
 - Orientate pivot pin (24) to proper position.
- 8. Pivot & (pulse) switch (25) wire harness through steering column.
 - Switch connector to vehicle wire harness.

- 9. Dimmer switch rod actuator (26) to base plate (27).

 Lubricate with lithium grease.
- 10. Base plate (27) to lock housing cover assembly (21).
 - Bottom edge of dimmer switch rod actuator (26) must rest on bend in dimmer switch rod (76).
- 11. Lock housing cover assembly (21).
- 12. Screws (18). Tighten screw in 12 o'clock position first, screw in 8 o'clock position second, and screw in 3 o'clock position third.

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- Tighten screws (18) in same order to 9.0 N·m (80 lb.in.).
- 13. Install multi-function lever. (See Section 3F)
- 14. Plug multi-function lever and cruise control connectors together and mount on base plate (27).
- 15. Housing cover end cap (28).
- 16. Do all steps, "Install or Connect", Sub Section A.

SUB SECTION C - MID COLUMN

INCLUDES:

STEERING COLUMN HOUSING ASM STEERING WHEEL LOCK SHOE SWITCH ACTUATOR SECTOR BEARING ASSEMBLY STEERING COL HSG SUPPORT ASM STEERING SHAFT ASSEMBLY SHIFT TUBE ASSEMBLY

Tools Required:

- J 23653-C Lock Plate Compressor
- J 21854-01 Pivot Pin Remover
- J 22635 Lock Shoe and Release Lever Pin Remover and Installer
- J 8092 Driver Handle
- J 38639 Strg Col Housing Bearing Installer
- J 23072 Shift Tube Remover
- J 23073-01 Shift Tube Installer

Important

 Before doing any service procedures in this section, removal of Inflator Module and Steering Wheel is needed. (Refer to service procedures in Section 3F)

Remove or Disconnect Figures 1 through 29 and 39

- 1. Disable the SIR system; refer to "Disabling The SIR System" in this Section.
- 2. Negative (-) battery cable.
- 3. Disconnect rose bud connector on EVO before removing column.
- 4. Steering column from vehicle. (See Section 3F)
 - All electrical switch connectors.
 - Sensor assembly (if vehicle is so equipped).

NOTICE: Once steering column is removed from vehicle, the column is extremely susceptible to damage. Dropping steering column assembly on its end could collapse steering shaft or loosen plastic injections which maintain column rigidity. Leaning on steering column assembly could cause jacket to bend or deform. Any of the above damage could impair steering column's collapsible design. If it is necessary to remove steering wheel, use only the specified steering wheel puller. Under no conditions should the end of shaft be hammered on as hammering could loosen plastic injections which maintain steering column rigidity.

[6] Inspect

- Steering column for accident damage. (See Figure 39)
- 5. Do steps 3 through 23, "Remove or Disconnect", Sub Section A.
- 6. Do steps 2 through 13, "Remove or Disconnect", Sub Section B.

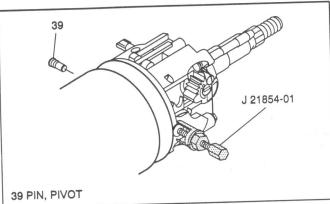


Figure 20 - Removing Pivot Pin

- 7. Pivot pins (39) using J 21854-01.
 - Lubricate with lithium grease.
 - Reinstall tilt lever. (See Section 3F)
- 8. Steering column housing assembly (32).
 - Pull back on tilt lever and pull steering column housing assembly (32) down and away from column.

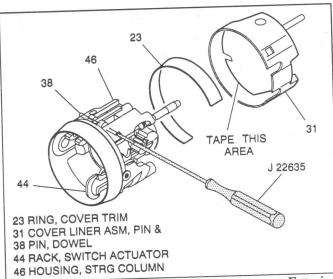


Figure 21 - Lock Housing Cover Components, Exterior

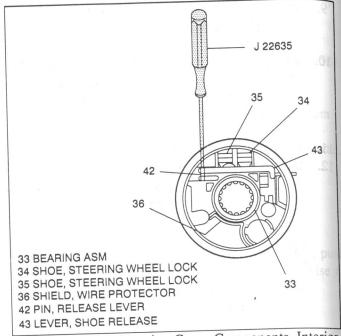


Figure 22 - Lock Housing Cover Components, Interior

| Important

 Remove only those components necessary to do repairs.

Disassemble

Steering Column Housing Assembly

- A. Bearing assembly (33).
- B. Switch actuator rack (44) and rack preload spring (45).
- C. Release lever pin (42) using J 22635.
- D. Shoe release lever (43).
- E. Release lever spring (41).
- F. Dowel pin (38) using J 22635.
- G. Lock shoes (34) and (35).
- H. Shoe springs (40).

Assemble

Steering Column Housing Assembly

- A. Shoe springs (40).
- B. Lock shoes (34,35).
- C. Dowel pin (38) using J 22635.
- D. Release lever spring (41).
- E. Shoe release lever (43).
- F. Release lever pin (42) using J 22635.
- G. Rack preload spring (45).
- H. Switch actuator rack (44) to actuator sector.
- I. Bearing assembly (33) lubricated with lithium grease to column housing (46) using J 38639 and J 8092.

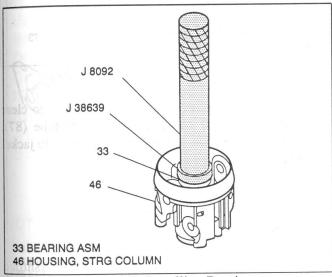


Figure 23 - Installing Bearings

- 9. Lower bearing adapter clip (91).
- 10. Sensor assembly (90).
- 11. Bearing adapter retainer (89).
- 12. Steering shaft bushing assembly (88).
- 13. Steering column shaft assembly (55).

[6] Inspect

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• Steering column shaft assembly (55) for accident damage. (See Figure 39)

Important

• Mark upper shaft assembly (56) and lower steering shaft asm (59) to ensure proper assembly. Failure to assemble properly will cause steering wheel to be turned 180 degrees. (See Figures 24 and 25)

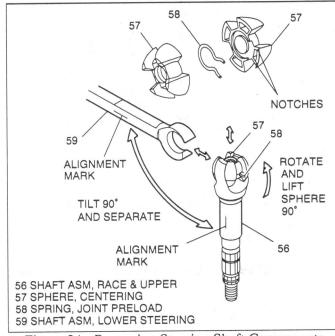


Figure 24 - Removing Steering Shaft Components

[Important

• Remove only those components necessary to do repairs.

Disassemble

Steering Column Shaft Assembly

- A. Upper shaft assembly (56), lower steering shaft assembly (59).
 - Tilt 90 degrees to each other and disengage.
- B. Centering sphere (57) from upper shaft assembly (56).
 - Rotate sphere 90 degrees and slip out.
- C. Joint preload spring (58) from centering sphere (57).

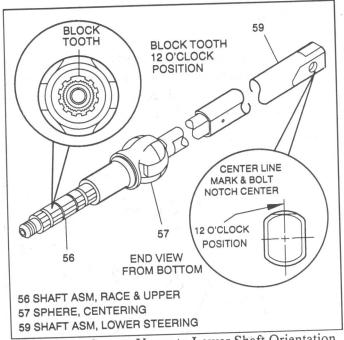


Figure 25 - Correct Upper to Lower Shaft Orientation

Assemble

Steering Column Shaft Assembly

- A. Joint preload spring (58) to two centering sphere (57).
- B. Centering sphere (57).
 - Lubricate with lithium grease, slip into upper shaft assembly (56), and rotate sphere 90 degrees.
- C. Upper shaft assembly (56) to lower steering shaft assembly (59).
 - Line up marks and tilt assemblies 90 degrees to each other.

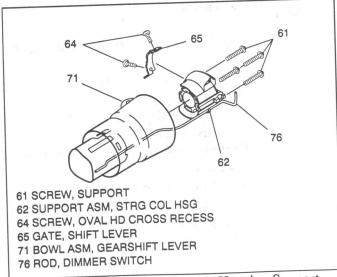


Figure 26 - Removing Column Housing Support

- 14. Support screws (61).
- 15. Column housing support assembly (62) with dimmer switch rod (76) from steering column jacket assembly (73).
 - Rod (76) from support (63).
- 16. Oval hd cross recess screws (64) and shift lever gate (65) from support (63).
- 17. Shift tube retaining ring (66).
- 18. Thrust washer (67).

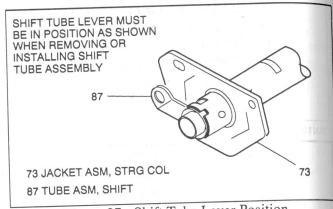


Figure 27 - Shift Tube Lever Position

NOTICE: Shift tube lever must be in position to clear jacket assembly (73) when removing shift tube (87). Forcing lever against jacket may cause damage to jacket assembly (73). (See Figure 27)

- 19. Shift tube (87) using J 23072.
- 20. Lock plate (68).
- 21. Wave washer (69).
- 22. Gearshift lever bowl (71) with gearshift bowl shroud (72).
- 23. Shift lever spring (70) from bowl (71).
- 24. Shroud (72) from bowl (71).

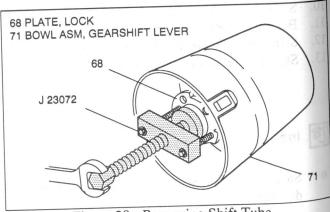


Figure 28 - Removing Shift Tube

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- Solenoid cable must remain straight and must not be kinked during removing and installing.
- 25. Solenoid cable assembly from interlock solenoid assembly (83).
 - A. Cable mounting clip from solenoid bracket (77).
 - B. Ball joint socket from solenoid (83).
 - C. Ball joint spring (85).
- 26. Hex washer head screw (84).
 - Solenoid assembly (83).
- 27. Hex head tapping screw (82) and hex nut (78).
 - Solenoid bracket (77).

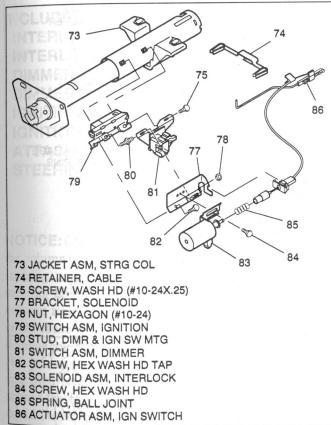


Figure 29 - Removing Ignition and Dimmer Switches

- 28. Washer head screw (75).
 - Dimmer switch assembly (81).
- 29. Dimmer & ignition switch mounting stud (80).
- 30. Ignition switch assembly (79) from ignition switch actuator assembly (86).

- 31. Cable assembly with ignition switch actuator assembly (86).
 - Cable clip from upper location of steering column jacket assembly (73).
 - Cable retainer (74).

Install or Connect Figures 1,2,30 through 37

NOTICE: See "Notice" on page 3F5A-1 of this section.

NOTICE: Ensure all fasteners are securely seated before applying needed torque. Failure to do so may result in component damage or malfunctioning of steering column.

- 1. Cable assembly with ignition switch actuator assembly (86).
 - A. Cable retainer (74) to jacket assembly (73).
 - B. Cable clip to upper location on jacket assembly (73).
 - C. Let lower cable hang freely.
- 2. Bowl (71) to shroud (72).
- 3. Spring (70) to bowl (71).
- 4. Shroud (72) with bowl (71) to jacket (73).
- 5. Wave washer (69).
 - Lubricate with lithium grease.
- 6. Lock plate (68).

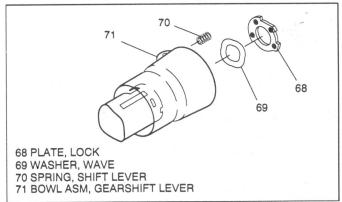


Figure 30 - Installing Lock Plate, Wave Washer

NOTICE: Shift tube lever must be in position to clear jacket assembly (73) when installing shift tube (87). Forcing lever against jacket may cause damage to jacket assembly (73). (See Figure 27)

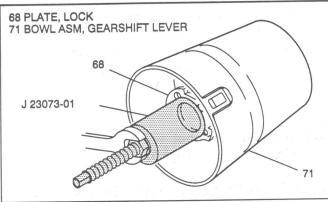


Figure 31 - Installing Shift Tube

- 7. Shift tube (87) using J 23073-01.
- 8. Thrust washer (67).
- 9. Retaining ring (66).

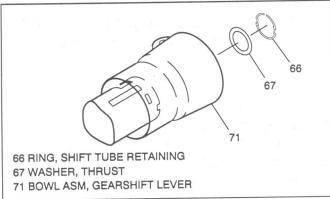


Figure 32 - Installing Shift Tube Retaining Ring, Thrust Washer

10. Gate (65) and screws (64) to support (63).

হ্ম Tighten

- Tighten screws (64) to 3.7 N·m (33 lb.in.).
- 11. Dimmer switch rod (76) to column housing support assembly (62).
- 12. Support assembly (62) and screws (61).

হ্ম Tighten

- Tighten screws (61) to 8.8 N·m (77 lb.in.).
- 13. Column shaft assembly (55) to jacket assembly (73).
 - Lubricate with lithium grease.

- 14. Tilt lever. (See Section 3F)
- 15. Steering column housing assembly (32) to column
 - Position column housing (32) and align switch actuator rack (44) with pin on end of ignition switch actuator assembly (86).
 - Pull back on tilt lever, pushing column housing assembly (32) onto column housing support assembly (62).
 - Release tilt lever to lock shoes (34) and (35) onto dowel pins.
 - Remove tilt lever. (See Section 3F)
- 16. Pivot pins (39).
 - Lubricate with lithium grease.
 - Press pin until firmly seated, two places.

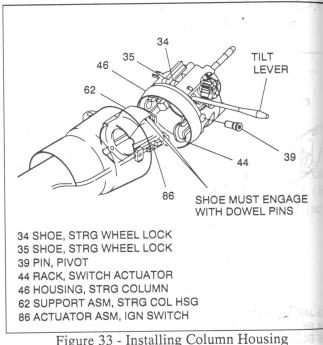


Figure 33 - Installing Column Housing to Housing Support

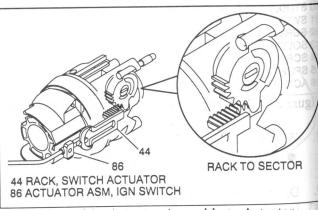


Figure 34 - Actuator Assembly to Actuator
Rack Installed

- 17. Steering shaft bushing assembly (88) to jacket assembly (73).
 - Lubricate inner surface of bushing (88) with lithium grease.
- 18. Bearing adapter retainer (89).
- 19. Sensor assembly (90).

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- 20. Lower bearing adapter clip (91).
- 21. Do steps 1 through 14, "Install or Connect", Sub Section B.
- 22. Do steps 1 through 23, "Install or Connect", Sub Section A.
- 23. Do all steps, Ignition Switch Assembly "Install or Connect" Sub Section D.

SUB SECTION D - LOWER COLUMN

INCLUDES:

INTERLOCK SOLENOID ASSEMBLY
INTERLOCK SOLENOID ADJUSTMENT
DIMMER SWITCH ASSEMBLY
DIMMER SWITCH ADJUSTMENT
IGNITION SWITCH ASSEMBLY
IGNITION SWITCH ADJUSTMENT
ATTACHMENT PLATE & SENSOR ASM
STEERING SHAFT BUSHING ASM

NOTICE: Once steering column is removed from vehicle, the column is extremely susceptible to damage. Dropping steering column assembly on its end could collapse steering shaft or loosen plastic injections which maintain column rigidity. Leaning on steering column assembly could cause jacket to bend or deform. Any of the above damage could impair steering column's collapsible design. If it is necessary to remove steering wheel, use only the specified steering wheel puller. Under no conditions should the end of shaft be hammered on as hammering could loosen plastic injections which maintain steering column rigidity.

Inspect

• Steering column for accident damage. (See Figure 39)

Interlock Solenoid Assembly

Figures 1,2,29 and 35

←→ Remove or Disconnect

- 1. Disable the SIR system; refer to "Disabling The SIR System" in this Section.
- 2. Negative (-) battery cable.
- 3. Vehicle wire harness connector from interlock solenoid assembly (83).

| Important

- Solenoid cable must remain straight and must not be kinked during removing and installing.
- 4. Solenoid cable assembly from solenoid (83).
 - A. Mounting clip from solenoid bracket (77).
 - B. Ball joint socket from solenoid (83).
 - C. Ball joint spring (85) from solenoid (83).
- 5. Screw (84) and solenoid assembly (83).

++ Install or Connect

NOTICE: See "Notice" on page 3F5A-1 of this section.

NOTICE: Ensure all fasteners are securely seated before applying required torque. Failure to do so may result in component damage or malfunctioning of steering column.

- 1. Solenoid (83) to bracket (77).
- 2. Screw (84).

হ্ম Tighten

- Tighten screw (84) to 4.0 N·m (35 lb.in.)
- 3. Unlock solenoid cable.
 - Disengage locking button to allow cable movement during adjustment.
- 4. Cable assembly to solenoid bracket (77) with locking button disengaged.
- 5. Balljoint spring (85) and balljoint socket to solenoid (83).

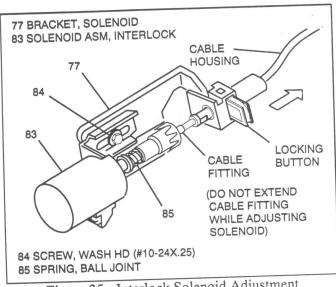


Figure 35 - Interlock Solenoid Adjustment

Adjust

- Interlock solenoid assembly (83).
 - A. Lock cylinder to "OFF" position.
 - B. Shift column out of "Park" position.
 - C. The locking button must be disengaged to allow cable movement. Pull cable housing away from solenoid (83) until cable fitting starts to extend. (Do not extend cable fitting while adjusting solenoid)
 - Let cable move back 1.0 to 2.0 mm.
 - Engage locking button.
- 6. Vehicle wire harness connector to solenoid assembly (83).
- 7. Negative (-) battery cable.

IMPORTANT: During Inspection and Adjustment of interlock & solenoid assembly, solenoid will become hot.

[6] Inspect

- Function check Interlock Solenoid assembly (83) for proper operation.
- Solenoid (83) must lock gearshift lever bowl assembly (71) whenever steering column is in "PARK" and when trying to shift from "PARK" without pressing brake pedal (solenoid is energized when ignition is on and solenoid is retracted).
- Solenoid (83) must release gearshift lever bowl assembly (71) when pressure is applied to brake pedal. (Solenoid is de-energized).
- Readjust if needed.
- 8. If all service operations are completed, enable the SIR system; refer to "Enabling The SIR System" in this section.

Dimmer Switch Assembly

Remove or Disconnect Figures 1,2 and 29

- Disable the SIR system; refer to "Disabling Th SIR System" in this Section.
- 2. Negative (-) battery cable.
- 3. Hex head tapping screw (82) and hex nut (78).
- 4. Solenoid assembly (83) with solenoid bracket (77 from dimmer & ignition switch mounting stud (80
- 5. Vehicle wire harness from dimmer switch (81).
- 6. Washer head screw (75).
- 7. Dimmer Switch assembly (81) from rod (76).

++ Install or Connect
Figures 1,2,29,35 and 36

NOTICE: See "Notice" on page 3F5A-1 of this section

NOTICE: Ensure all fasteners are securely seated befapplying required torque. Failure to do so may result component damage or malfunctioning of steering colur

- 1. Dimmer Switch assembly (81) to dimmer switch rod (76) and stud (80).
- 2. Solenoid (83) with bracket (77).

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- 3. Tapping screw (82) hexagon nut (78) and washer head screw (75).
 - Tighten finger tight.

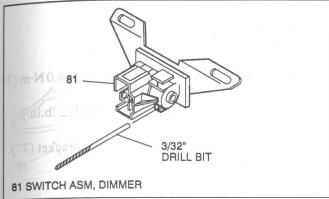


Figure 36 - Adjusting Dimmer Switch

Adjust

- Dimmer switch (81). (See Figure 36)
 - A. Place 3/32-inch drill bit in hole on switch to limit travel.
- Position switch on column and push against add sides as the dimmer switch rod (76) to remove all lash.
- C. Remove drill bit.

1 Tighten

- Tighten screw (75) and nut (78) to 4.0 N·m (35 lb.in.)
- Tighten screw (82) to 2.5 N·m (22 lb.in.)
- 4. Vehicle wire harness to dimmer switch (81).
- 5. Negative (-) battery cable.
- 6. Do Inspect, Interlock Solenoid Assembly, "Install or Connect" in this section.
- 7. If all service operations are completed, enable the SIR system; refer to "Enabling The SIR System" in this Section.

Ignition Switch Assembly

Remove or Disconnect Figures 1,2 and 29

- 1. Disable the SIR system; refer to "Disabling The SIR System" in this Section.
- 2. Negative (-) battery cable.
- 3. Steering column from vehicle. (See Section 3F)
- 4. Solenoid cable assembly from interlock solenoid assembly (83) and solenoid bracket (77).
 - Ball joint spring (85).
- 5. Hexagon washer head screw (84).
 - Interlock solenoid assembly (83).
- 6. Hexagon head tapping screw (82) and nut (78).
 - Solenoid bracket (77).
- 7. Washer head screw (75).
 - Dimmer Switch assembly (81).
- 8. Dimmer & ignition switch mounting stud (80).
 - Ignition switch assembly (79).
 - Ignition switch (79) from vehicle wire harness.

++ Install or Connect Figures 1,2,29,35 through 37

NOTICE: See "Notice" on page 3F5A-1 of this section.

NOTICE: Ensure all fasteners are securely seated before applying required torque. Failure to do so may result in component damage or malfunctioning of steering column.

1. Lock cylinder (20) to "OFF-LOCK" position.

NOTICE: Install ignition switch assembly (79) with switch in "OFF-LOCK" position. (See Figure 37) New ignition switch will be pinned in "OFF-LOCK" position. Remove plastic pin after switch is assembled to column. Failure to do so may cause switch damage.

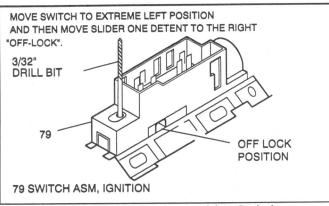


Figure 37 - Adjusting Ignition Switch

Adjust

- Ignition switch assembly (79). (See Figure 37)
 - A. Move switch slider to extreme right position.
 - B. Move switch slider one detent to left "OFF-LOCK" position.
 - C. Install 3/32 inch drill bit in hole on switch to limit travel.
- 2. Ignition switch assembly (79) to actuator assembly (86).
- 3. Dimmer & ignition switch mounting stud (80).

হ্ম Tighten

- Tighten stud (80) to 4.0 N·m (35 lb.in.)
- 4. Remove drill bit from ignition switch (79).
- 5. Vehicle wire harness to ignition switch (79).
- 6. Dimmer switch assembly (81) to dimmer switch rod (76) and stud (80).
- 7. Washer head screw (75).
 - Tighten finger tight.
- 8. Interlock solenoid assembly (83) with solenoid bracket (77) to stud (80).
- 9. Hex nut (78) and hex head tapping screw (82).
 - Tighten finger tight.

Adjust

- Dimmer switch (81). (See Figure 36)
 - A. Place 3/32-inch drill bit in hole on switch to limit travel.
 - B. Position Switch (81) to remove all lash.
 - C. Remove drill bit.

1 Tighten

- Tighten screw (75) and nut (78) to 4.0 N·m (35 lb.in.).
- Tighten screw (82) to 2.5 N·m (22 lb.in.).
- 10. Interlock solenoid assembly (83) to bracket (77).
- 11. Screw (84).

হ্ম Tighten

- Tighten screw (84) to 4.0 N·m (35 lb.in.).
- 12. Steering column to vehicle. (See Section 3F)
- 13. Vehicle wire harness to ignition switch (79), dimmer switch (81), and solenoid assembly (83).
- 14. Negative (-) battery cable.
- 15. Do Adjust and Inspect, Interlock Solenoid Assembly, "Install or Connect" in this section.
- 16. If all service operations are completed, enable the SIR system; refer to "Enabling The SIR System" in this Section.

Attachment Plate & Sensor Assembly Steering Shaft Bushing Assembly

Remove or Disconnect Figures 1,2,38 and 39

- 1. Disable the SIR system; refer to "Disabling The SIR System" in this Section.
- 2. Negative (-) battery cable.
- 3. Steering column from vehicle. (See Section 3F)
 - All electrical switch connectors.
 - Sensor assembly (if vehicle is so equipped).
- 4. Lower bearing adapter clip (91).

NOTICE: On vehicles so equipped remove attachment plate & sensor assembly (90).

- 5. Sensor assembly (90).
- 6. Bearing adapter retainer (89).
- 7. Steering shaft bushing assembly (88).

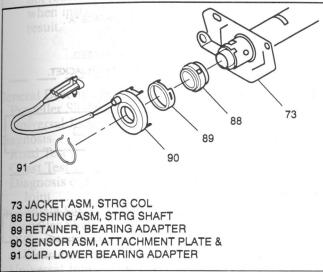
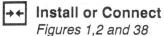


Figure 38 - Removing Sensor Assembly and Steering Shaft Bushing



NOTICE: See "Notice" on page 3F5A-1 of this section.

NOTICE: Ensure all fasteners are securely seated before applying needed torque. Failure to do so may result in component damage or malfunctioning of steering column.

- 1. Steering shaft bushing assembly (88) to jacket assembly (73).
 - Lubricate inner surface of bushing (88) with lithium grease.
- 2. Bearing adapter retainer (89),
- 3. Sensor assembly (90).
- 4. Lower bearing adapter clip (91).
- 5. Steering column to vehicle. (See Section 3F)
 - Connect all electrical switch connectors.
 - Connect sensor assembly (if vehicle is so equipped).
- 6. Negative (-) battery cable.
- 7. If all service operations are completed, enable the SIR system; refer to "Enabling The SIR System" in this Section.

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CHECKING STEERING COLUMN FOR ACCIDENT DAMAGE 1.59 MM NOTICE: Vehicles involved in accidents resulting in frame damage, major body or sheet metal damage, or where the steering column has been impacted, or where supplemental inflatable restraints systems deployed may also have a damaged or misaligned steering column. CHECKING PROCEDURE VIEW B (CAPSULES) JACKET ASM, STEERING COLUMN VIEW A Check capsules on steering column bracket assembly; all should be THE BOLT HEAD MUST CAPSULES MUST BE within 1.59mm from the bottom of the slots (View A). If not, bracket NOT CONTACT SURFACE "A". should be replaced if bracket is bolted to the jacket asm or the jacket WITHIN 1.59 MM IF CONTACT IS MADE, FROM BOTTOM OF asm should be replaced if bracket is welded to jacket asm. THE CAPSULE SHEAR Check contact surface "A" on capsules (View B). The bolt head must SLOTS: LOAD WILL BE INCREASED. IF NOT, REPLACE not contact surface "A" or shear load would be increased. If contact REPLACE BRACKET OR JACKET. BRACKET OR JACKET. is made, replace bracket asm or jacket asm. CHECK FOR SHEARED INJECTED Check for jacket asm collapse by measuring the distance from the PLASTIC AT THESE LOCATIONS. lower edge of upper jacket to a defined point on the lower jacket (View E). If measured dimensions are not within specifications, a new VIEW C jacket must be installed. (SHIFT TUBE) SHIFT TUBE ASM Visually inspect shift tube for sheared injected plastic (View C). If shift tube shows sheared plastic, a new shift tube must be installed. Check operation of shift lever. If you can move lever to "Park" CHECK FOR SHEARED INJECTED position without raising lever, it is an indication that upper shift tube PLASTIC AT THESE LOCATIONS. plastic bearing is broken. VIEW D STEERING SHAFT ASM Visually inspect steering shaft for sheared injected plastic (View D). (STEERING SHAFT) If steering shaft shows sheared plastic, a new steering shaft must be 282.77 MM NOTICE: Inflatable restraint coll asm must be removed from +/-.50 MM steering column and allowed to hang freely before shaft is rotated. Fallure to do so could damage coll assembly. Any frame damage that could cause a bent steering shaft must have steering shaft runout checked in the following manner: Using a dial indicator at lower end of steering shaft, have steering wheel rotated.

Figure 39 - Checking for Accident Damage

VIEW E

(METHOD TO DETERMINE COLUMN COLLAPSE)

WITH LOWER BEARING REMOVED MEASURE DISTANCE BETWEEN ARROWS.

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Runout must not exceed 1.59mm.

FASTENER HIGHTERING OF LOW 1997					
	41.	.0 N·m (30 lb.ft.)			
(1)	Steering Wheel-to-Shaft Nut 2. Guard & Pivot Switch Bolts 3.	3 N·m (20 lb.in.)			
(8)	Guard & Pivot Switch Boits	4 N·m (30 lb.in.)			
(12)	Turn Signal Switch Connecting Sciews	3 N·m (20 lb.in.)			
(13)	Turn Signal Switch Arm Screw	.0 N·m (80 lb.in.)			
(18)	Lock Housing Cover Screws	.5 N·m (22 lb.in.)			
(20)	Lock Retaining Screw	.8 N·m (77 lb.in.)			
(61)	Support-to-Lock Plate Screws	.7 N·m (33 lb.in.)			
(64)	Shift Lever Gate Connecting Sciews	.0 N·m (35 lb.m.)			
(75)	Upper Ignition & Dimmer Switch Sciew	.0 N·m (35 lb.in.)			
(78)	Lower Dimmer Switch & Solehold Blacket National A	0 N·m (35 lb.m.)			
(80)	Lower Ignition & Dimmer Switch Stud	2.5 N·m (22 lb.in.)			
(82)	Lower Ignition & Dimmer Switch Stud	1.5 N·m (35 lb.in.)			
(84)	Lower Solenoid Bracket Mounting Screw				