

2003-05 STEERING**Steering Columns - Z4****DESCRIPTION & OPERATION**

WARNING: When working on vehicles with Supplemental Restraint System (SRS), use extreme caution around steering wheel or column. Work on components of the AIRBAG system should only be carried out with the battery disconnected, the negative terminal post covered and the plug connection of the cable leading to the gas generator disconnected. If only the battery is disconnected, it is absolutely essential to adhere to a waiting period of 5 seconds. DO NOT apply electrical power to any component on steering column without disconnecting SRS control unit; air bag system may activate. See appropriate AIR BAG RESTRAINT SYSTEMS article.

SERVICE PRECAUTIONS

Observe the following precautions when working on air bag systems:

1. When working around steering column and before any repairs are performed, disable SRS. See appropriate AIR BAG RESTRAINT SYSTEMS article.
2. Always ensure the radio is off before disconnecting battery. This will prevent damage to radio microprocessor.
3. Before performing any body damage straightening or electrical arc-welding, disable SRS. See appropriate AIR BAG RESTRAINT SYSTEMS article. Disconnect front sensors.
4. Wait at least 5 seconds after SRS is disabled before servicing system as system maintains SRS voltage at least that long. Servicing SRS before waiting period may cause accidental air bag deployment and personal injury.
5. Always wear safety glasses and gloves when handling a deployed air bag module. Air bag module may contain sodium hydroxide deposits which are irritating to the skin.
6. Never use any SRS component that has been dropped from 3 feet or more.
7. To avoid air bag deployment when trouble shooting SRS, DO NOT use self-powered electrical test equipment such as battery-powered or AC-powered voltmeter, ohmmeter, etc. DO NOT perform any repair on any portion of SRS wiring circuit.
8. Always handle air bag module with trim cover away from your body. Always place air bag module on workbench with trim cover up, away from loose objects.
9. Never expose SRS components to temperatures greater than 212°F (100°C).
10. Never expose any SRS system components to cleaning agents such as solvents, gasoline, lye, etc.

ADJUSTMENTS**CONTACT RING**

To center contact ring by aligning arrows on front of steering wheel, press down hub center spring clip lock and hold it down. On bottom side of steering wheel, turn contact ring fully clockwise or counterclockwise until it stops. Turn contact ring back about 3 turns until arrows align, and release spring clip lock. Contact ring is in center position.

STEERING ANGLE SENSOR

NOTE: In vehicles with active front steering, steering angle sensor adjustment is integrated in the service function "Initial Operation/Adjustment For Active Front Steering" and must not be carried out separately.

Steering angle sensor adjustment must be carried out:

- After adjustment work on the front axle/steering.
- After all mechanical work on the steering system.
- After the following components have been replaced/coded:
 - Steering Column Switch Cluster
 - DSC Control Unit
 - ARS Control Unit

Connect vehicle to BMW diagnosis system. Select and carry out steering angle sensor adjustment under Service Functions.

REMOVAL & INSTALLATION

STEERING COLUMN SWITCHES

For removal and installation of steering column switches, see STEERING COLUMN SWITCHES.

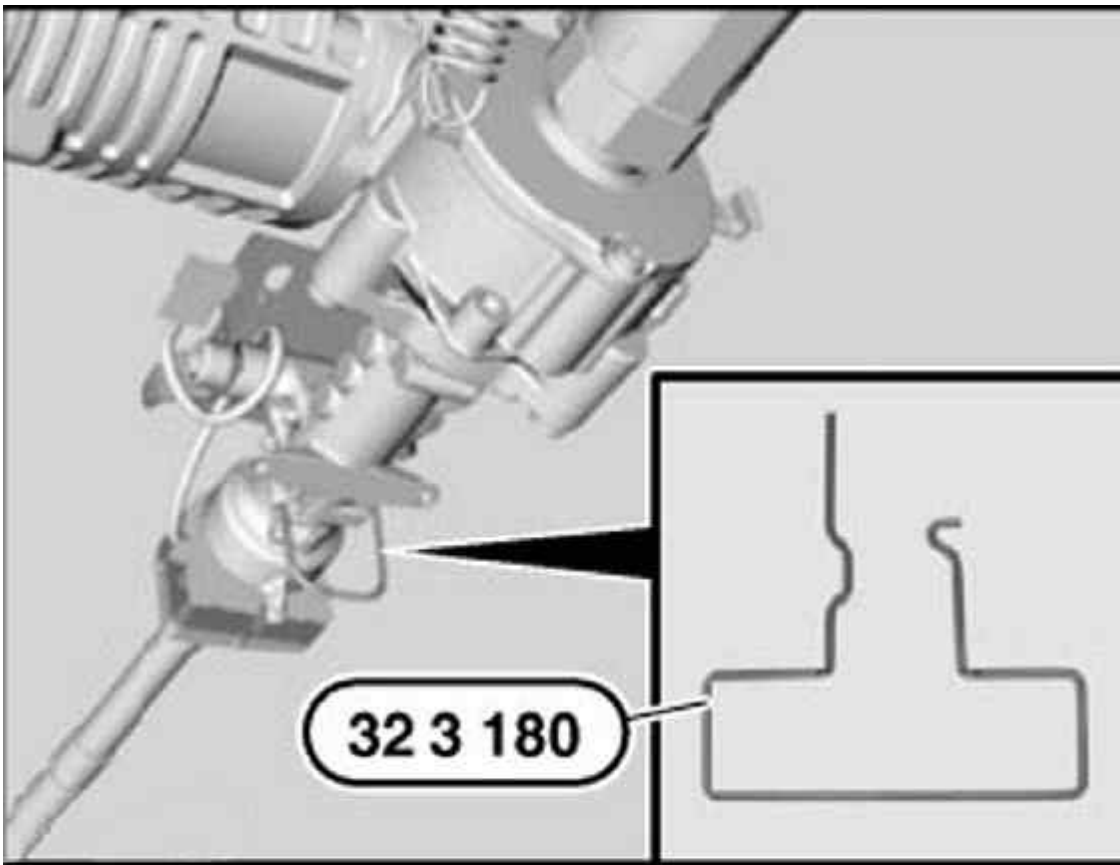
STEERING COLUMN

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

Disconnect negative lead from battery. Remove trim panel for pedal assembly. See **PEDAL ASSEMBLY TRIM**. Remove air duct in footwell. Move steering to straight-ahead position.

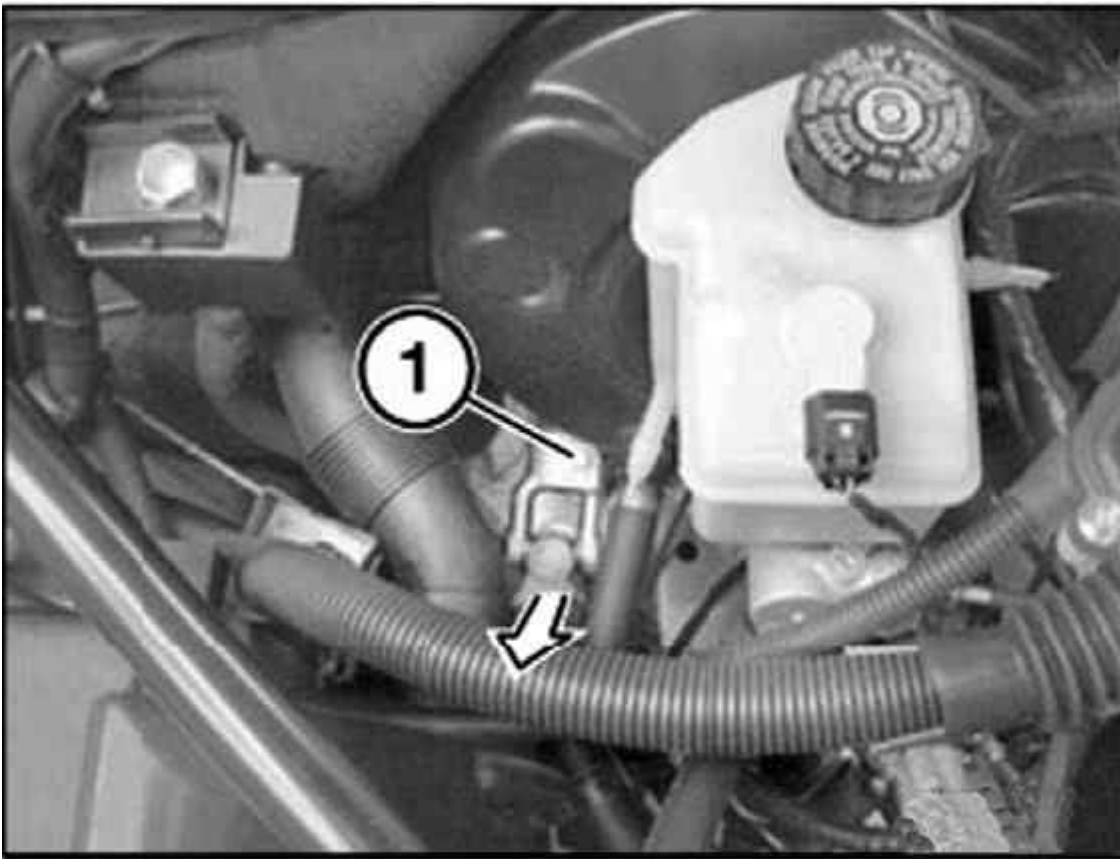
Lock steering column with special tool (32 3 180). See **Fig. 1**. Special tool may only be removed again when the steering column has been connected to the steering gear. Remove light switch center. Remove fixture for steering column stalk.



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Fig. 1: Locking Steering Column**Courtesy of BMW OF NORTH AMERICA, INC.**

Release clamping screw (1). See **Fig. 2** . Separate lower section of steering spindle from steering column and press downwards. During installation, recut thread. Replace clamping screw (1). During installation, make sure universal joint is correctly seated. Lower section of steering spindle can only be joined in one position.

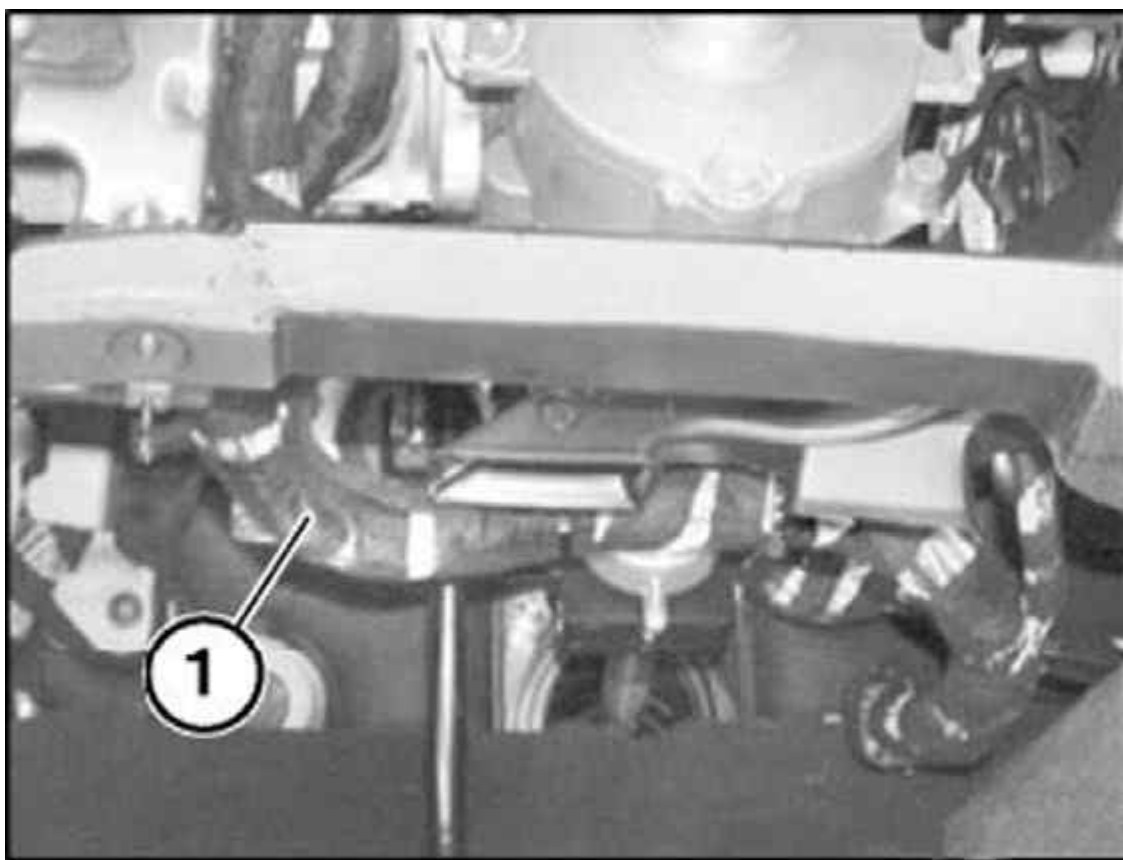


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Fig. 2: Releasing Clamping Screw

Courtesy of BMW OF NORTH AMERICA, INC.

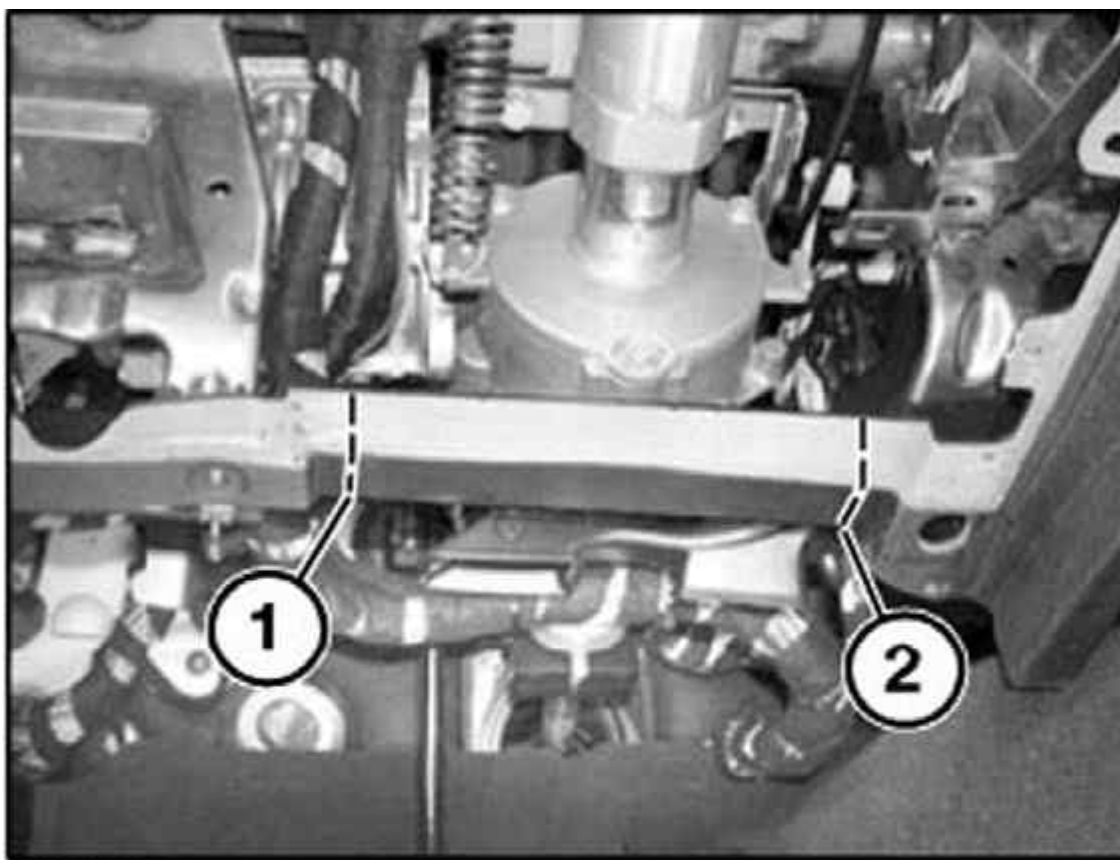
Disconnect plug connections from wiring harness (1) at steering column. See **Fig. 3** . Remove wiring harness (1) completely from steering column.



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Fig. 3: Removing Wire Harness From Steering Column
Courtesy of BMW OF NORTH AMERICA, INC.

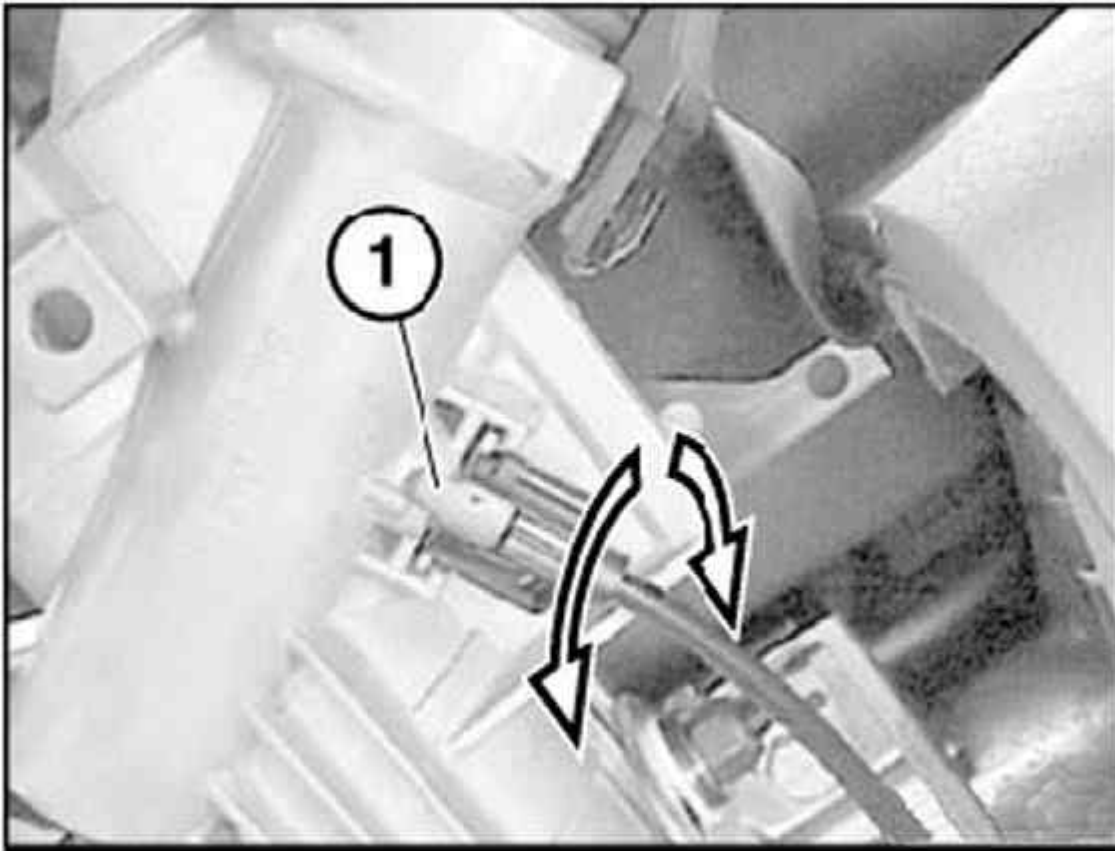
Cut instrument panel at dotted lines (1,2). Section pulled out is no longer needed. See **Fig. 4** .



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Fig. 4: Cutting Instrument Panel At Dotted Lines
Courtesy of BMW OF NORTH AMERICA, INC.

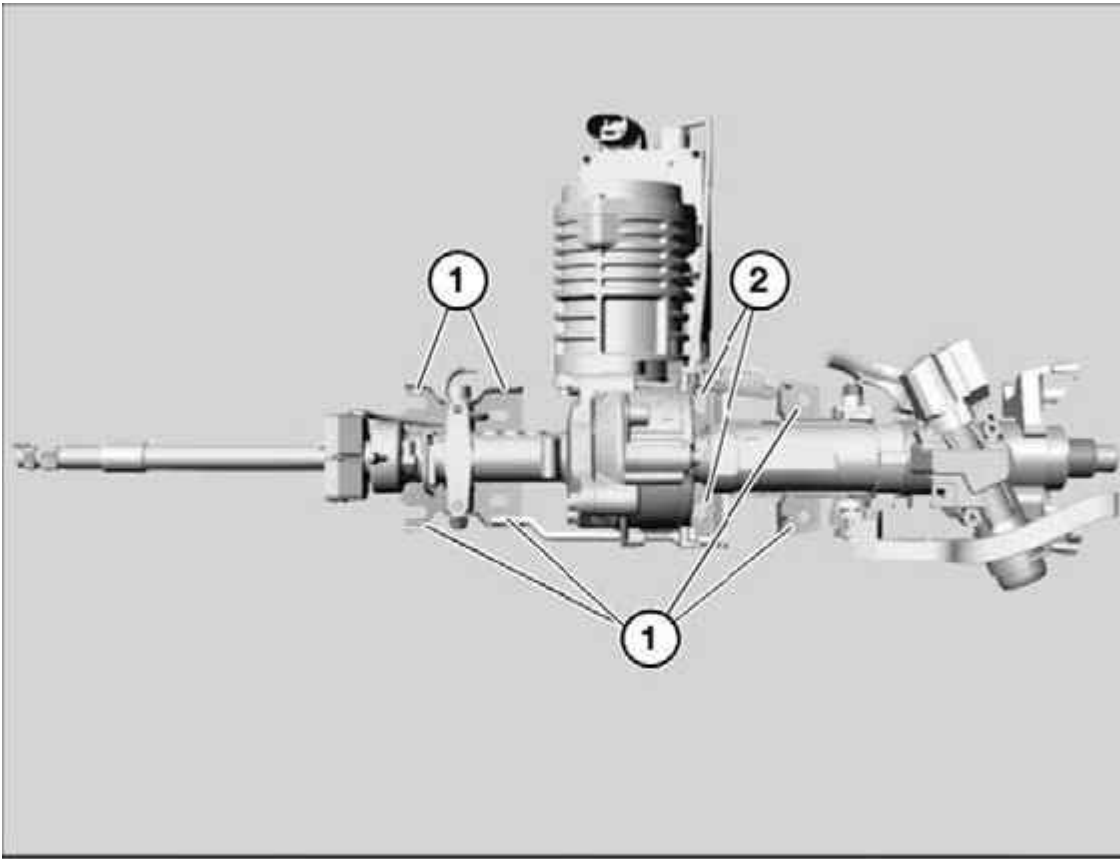
If necessary, remove cable for interlock. During installation, lock (1) must snap into place. See **Fig. 5** .



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Fig. 5: Ensuring Lock Snaps Into Place
Courtesy of BMW OF NORTH AMERICA, INC.

Remove screws (1,2). Remove steering column. See **Fig. 6** . Replacement steering columns are secured with a centering element. This centering element may only be removed when the new steering column has been fitted in the vehicle and connected to the steering gear. Then insert hub centering element into removed steering column in place of special tool (32 3 180).



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Fig. 6: Removing Steering Column

Courtesy of BMW OF NORTH AMERICA, INC.

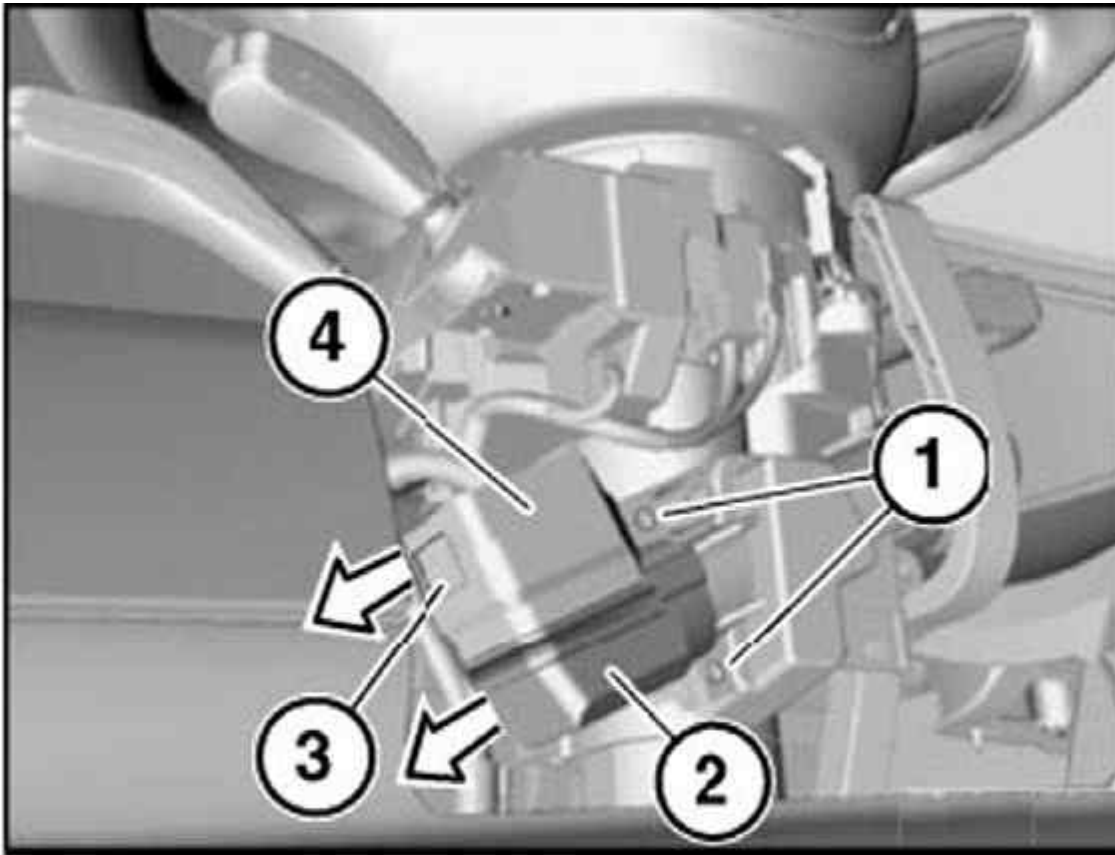
Modify lock cylinder. Modify steering angle sensor. See **STEERING ANGLE SENSOR** . Convert ignition starter switch. Convert cable holder and cable duct.

IGNITION SWITCH

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

Disconnect battery negative lead. Remove lower section of steering column trim. See **LOWER SECTION OF STEERING COLUMN COVER** . Remove sealing varnish and release headless setscrews (1). Detach ignition starter switch (2) in direction of arrow. During installation, secure headless setscrews (1) with sealing varnish. Open lock (3) in direction of arrow and disconnect plug (4) from ignition starter switch (2). See **Fig. 7** .



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Fig. 7: Removing Ignition Switch

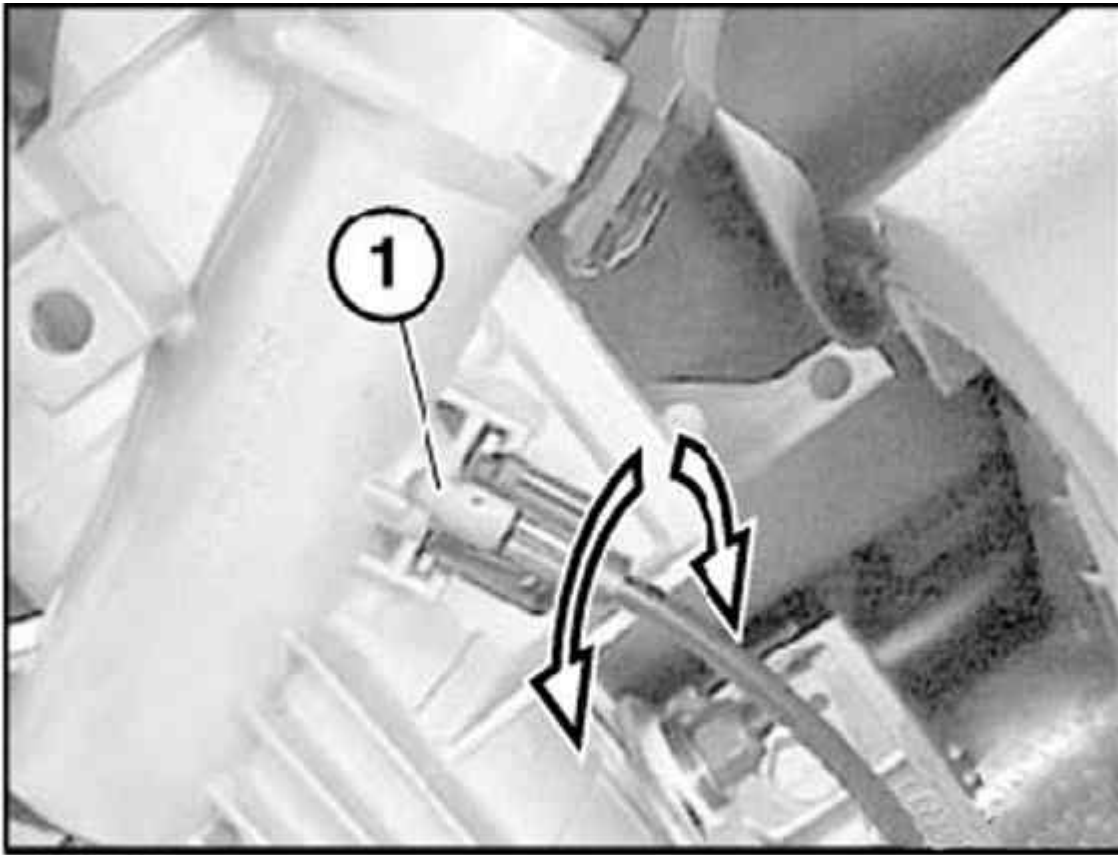
Courtesy of BMW OF NORTH AMERICA, INC.

INTERLOCK CABLE

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

Remove interlock cable from shift lever. See **INTERLOCK CABLE** . Remove lower section of steering column trim. See **LOWER SECTION OF STEERING COLUMN COVER** . Open lock (1) and remove cable. See **Fig. 8** . During installation, ensure lock (1) snaps into place.



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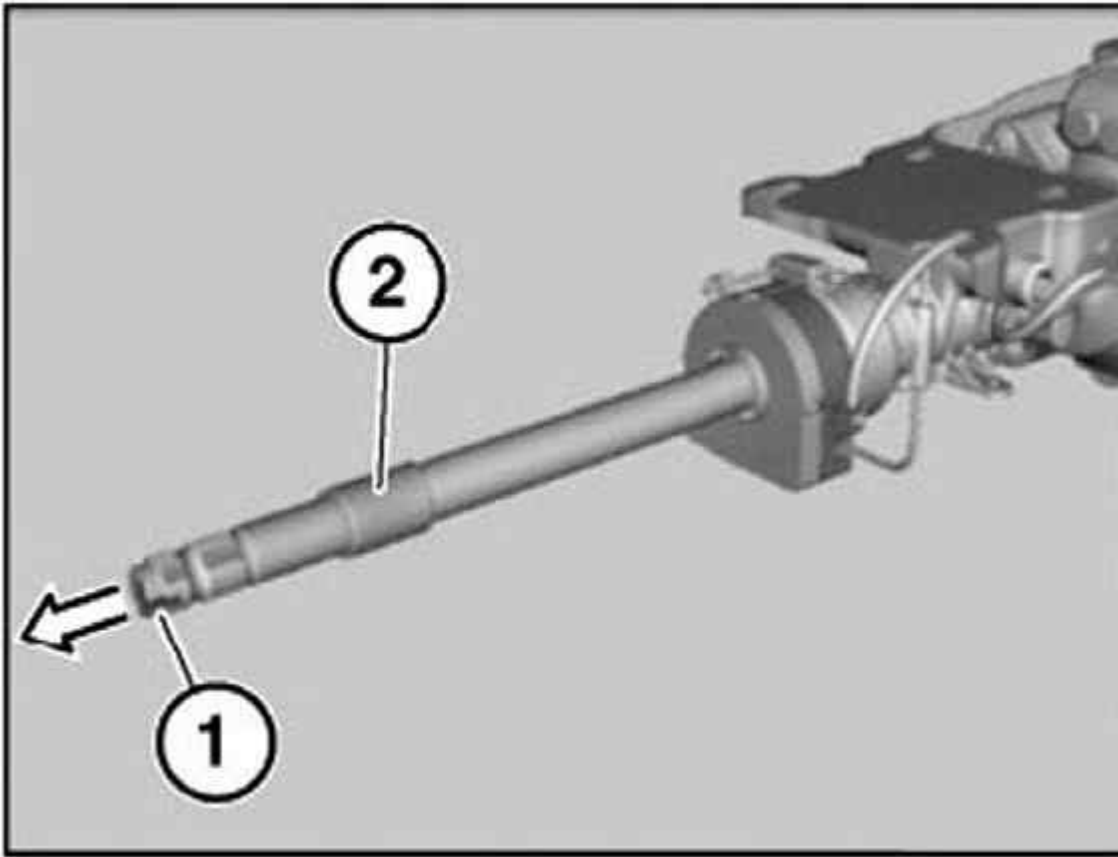
Fig. 8: Opening Lock & Removing Cable
Courtesy of BMW OF NORTH AMERICA, INC.

STEERING ANGLE SENSOR

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

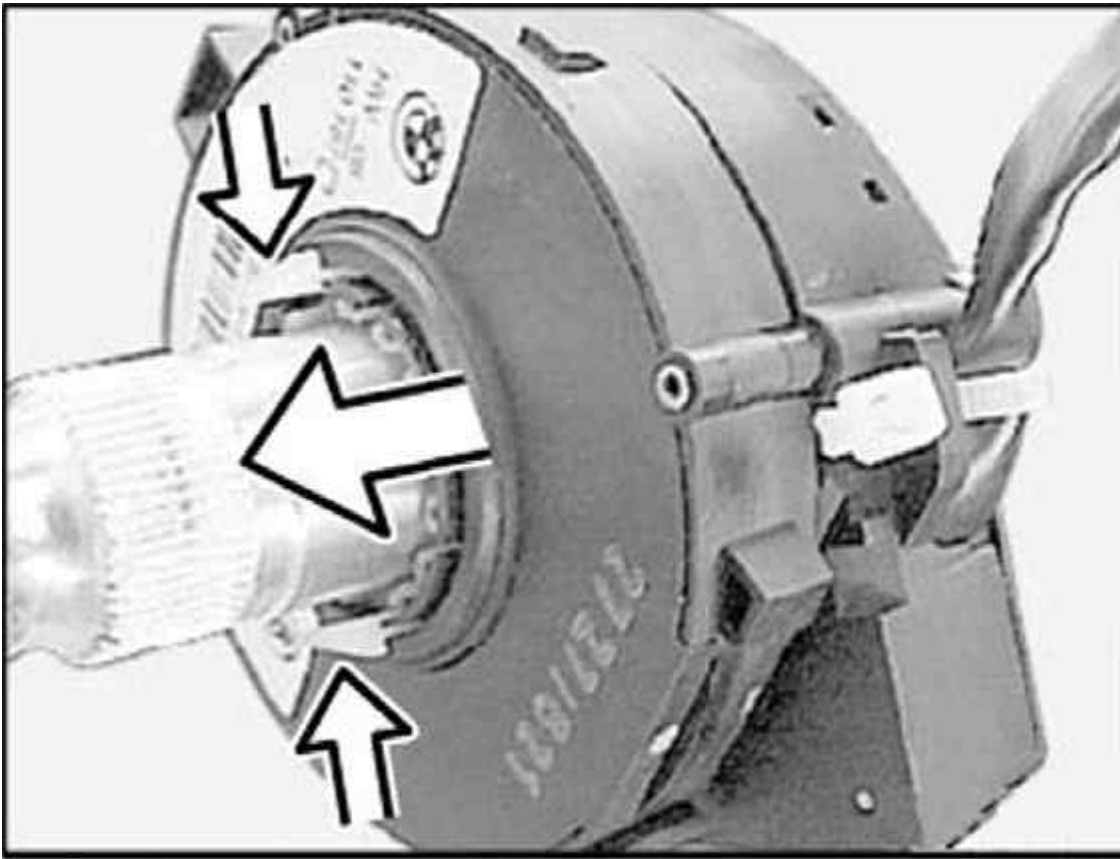
Disconnect battery. Remove steering column. See **STEERING COLUMN** . Detach lug (1) and bushing (2). See **Fig. 9** . During installation, replace bushing.



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Fig. 9: Detaching Lug (1) & Bushing (2)
Courtesy of BMW OF NORTH AMERICA, INC.

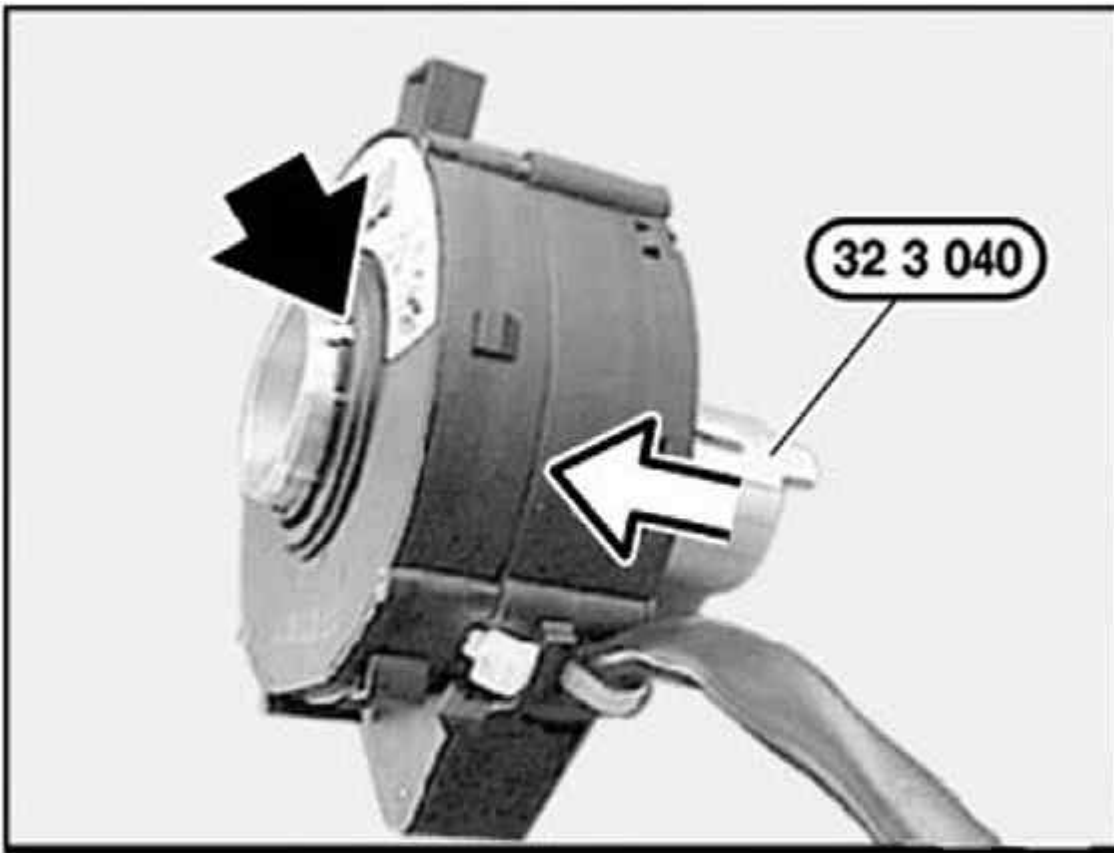
Press down both locking hooks. Detach steering angle sensor. See **Fig. 10** .



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Fig. 10: Pressing Down Locking Hooks & Detaching Steering Angle Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

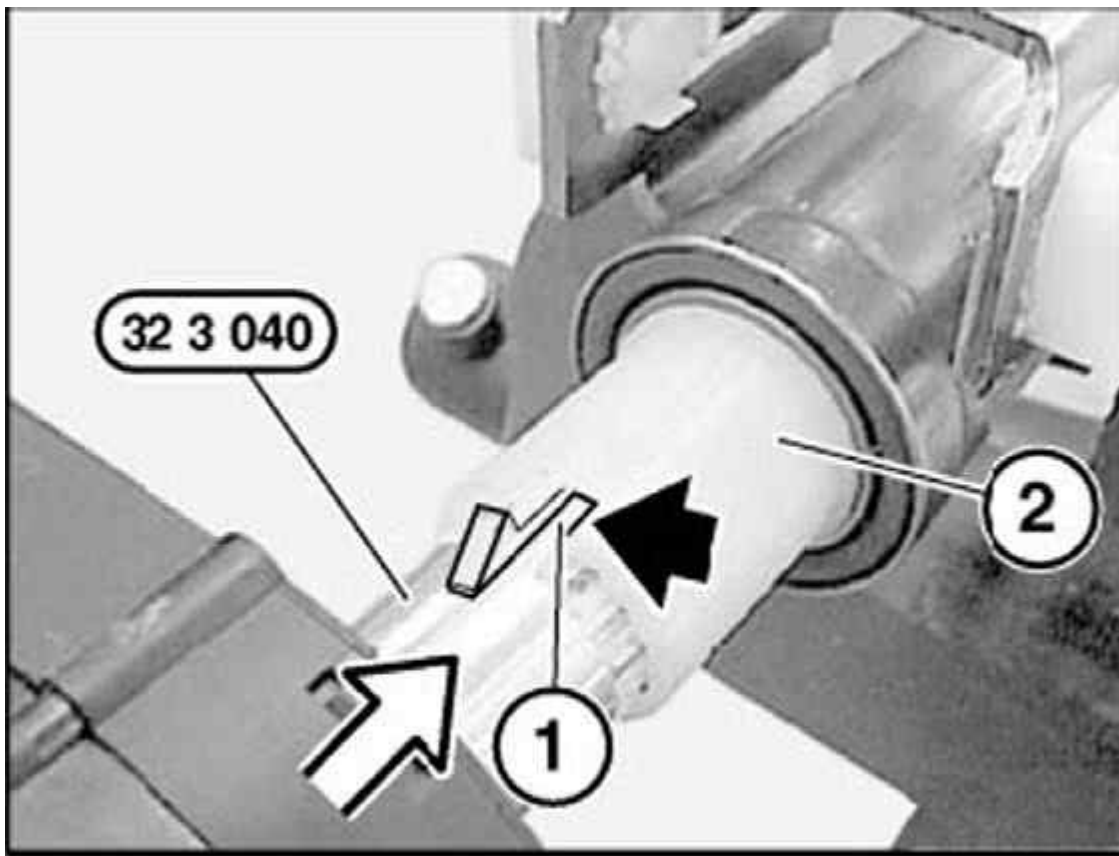
Slide special tool (32 3 040) into steering angle sensor. The link must rest in the opening of the steering angle sensor. See **Fig. 11** .



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Fig. 11: Sliding Special Tool Into Steering Angle Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

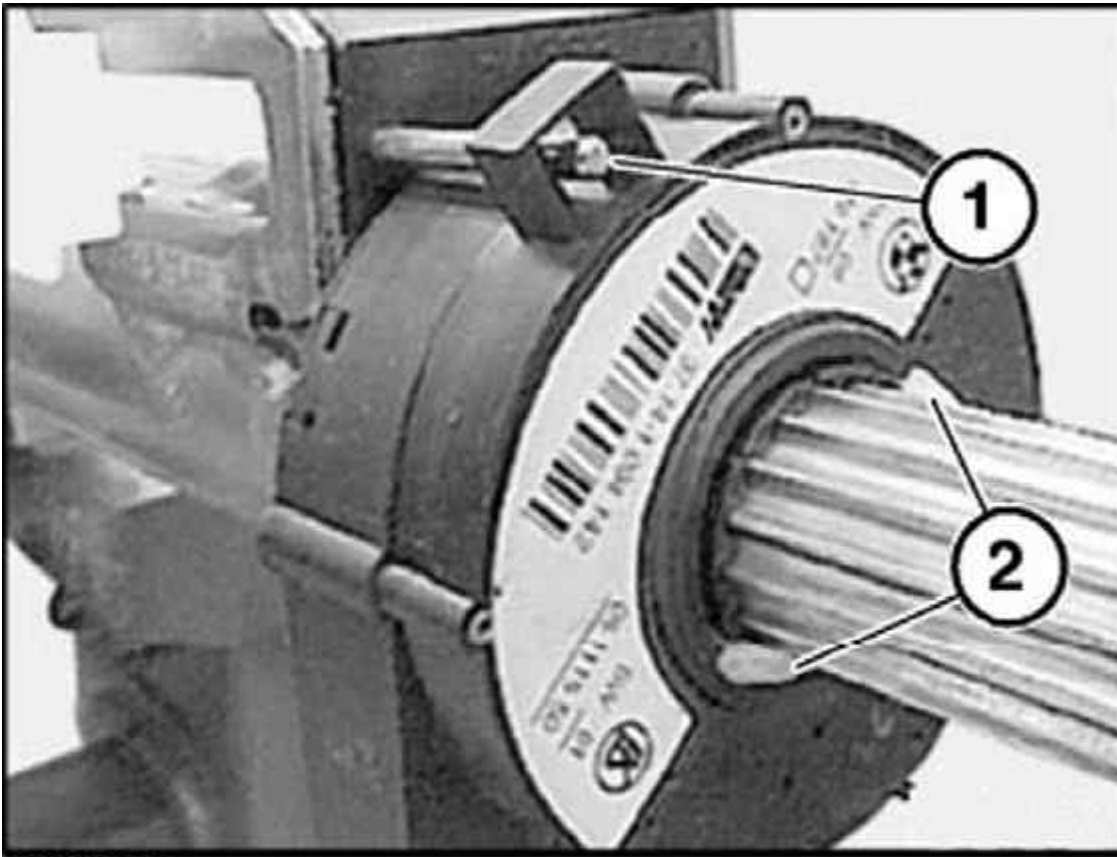
Locate special tool (32 3 040) with steering angle sensor. Both lugs (1) of special tool must rest in openings of bushing (2). See **Fig. 12** . Push on steering angle sensor.



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Fig. 12: Lugs Of Special Tool Rest In Openings Of Bushing
Courtesy of BMW OF NORTH AMERICA, INC.

Locking element (1) must be inserted in holder (2) of steering angle sensor. Both locking hooks must be engaged. See **Fig. 13** .



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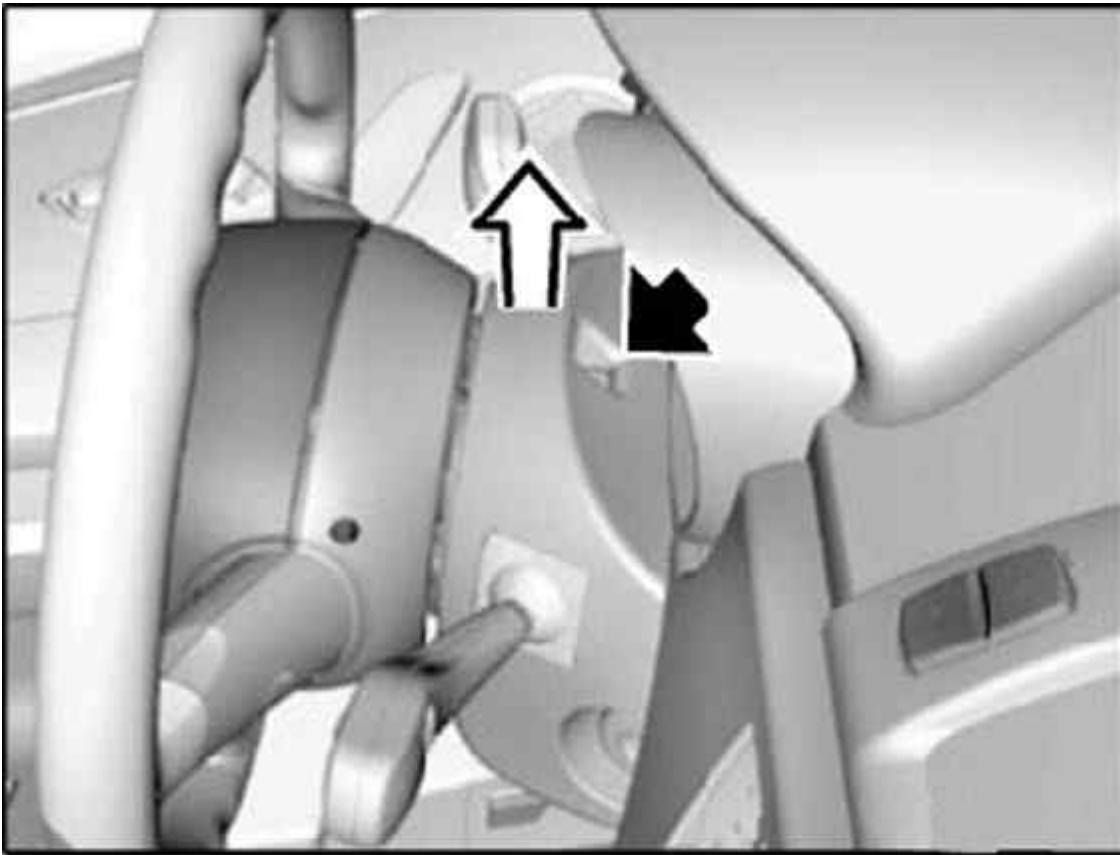
Fig. 13: Locking Element Inserted In Holder
Courtesy of BMW OF NORTH AMERICA, INC.

UPPER SECTION OF STEERING COLUMN COVER

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

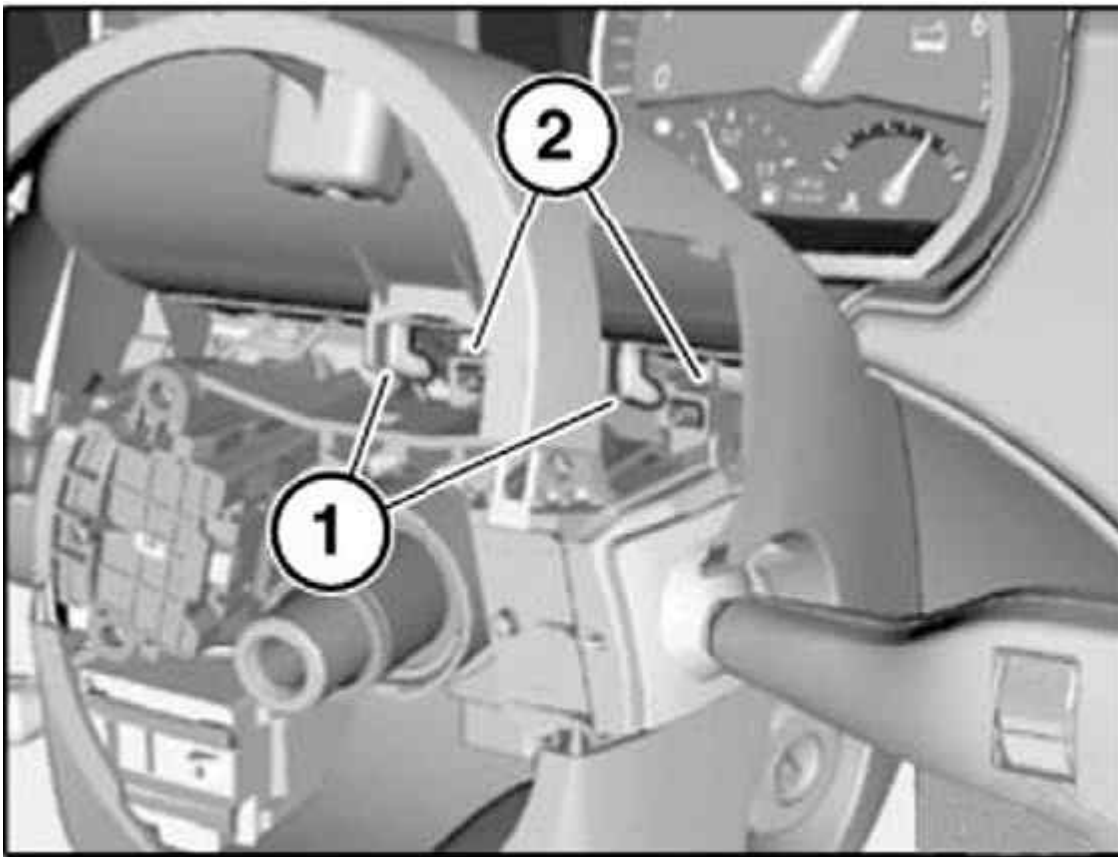
Remove lower section of steering column cover. See **LOWER SECTION OF STEERING COLUMN COVER**. Release screw. Pull off upper section of steering column cover upwards. See **Fig. 14**. Unclip steering wheel cover from instrument cluster. During installation, fit new expanding nut.



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Fig. 14: Pulling Off Upper Section Of Steering Column
Courtesy of BMW OF NORTH AMERICA, INC.

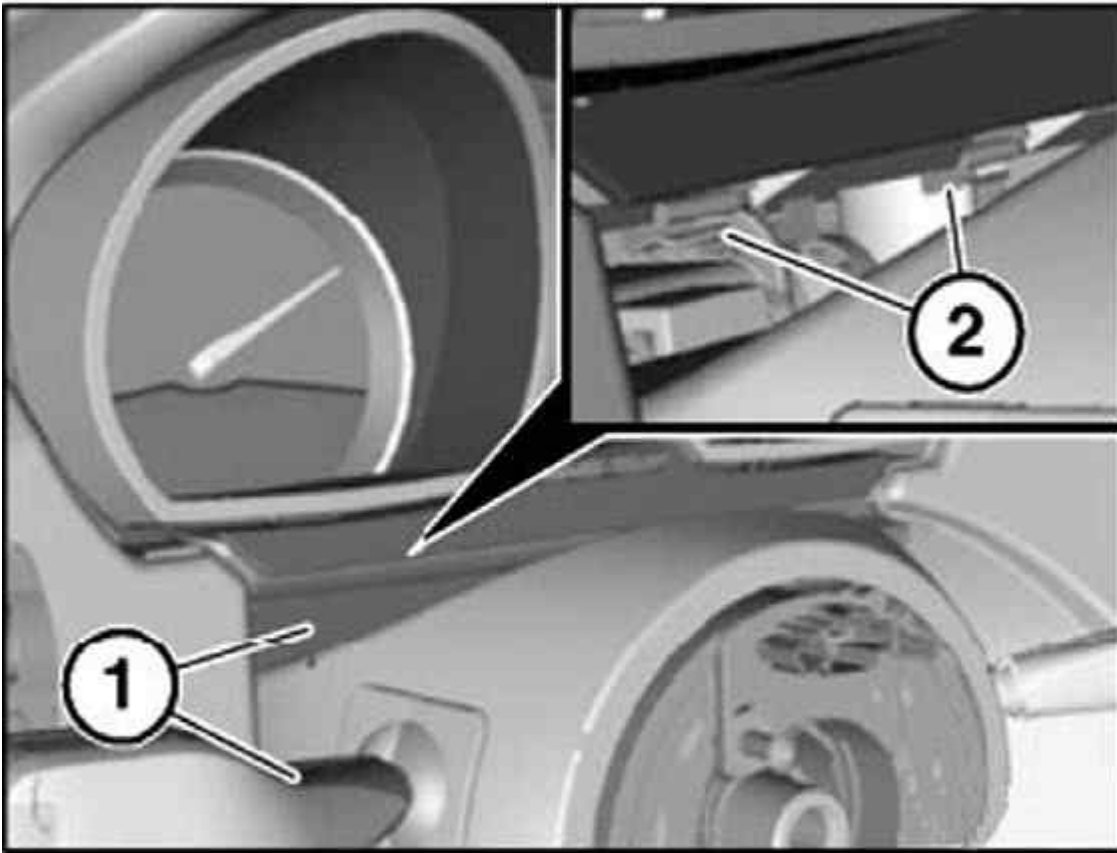
During installation, hooks (1) must engage in guides (2) of steering column. See **Fig. 15** .



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Fig. 15: Hooks Must Engage In Guides Of Steering Column
Courtesy of BMW OF NORTH AMERICA, INC.

During installation, clip steering wheel cover (1) into retaining clips (2) on instrument cluster. See **Fig. 16** .



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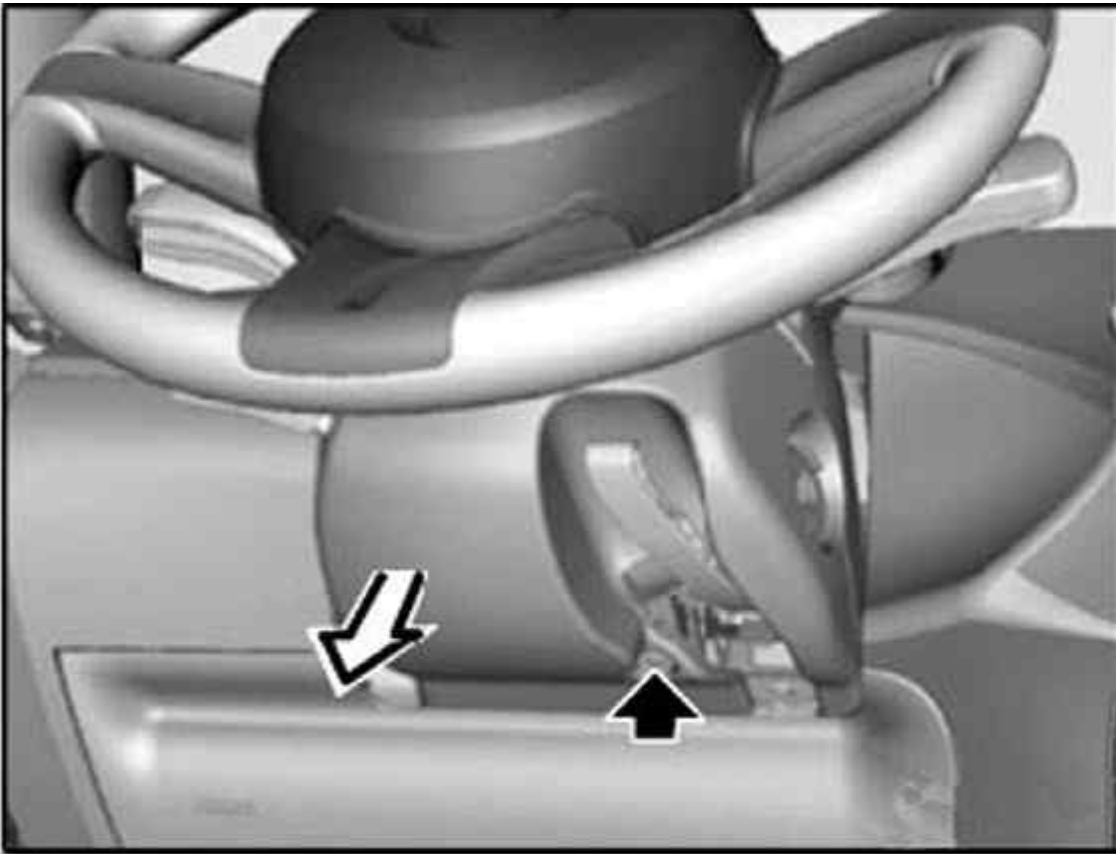
Fig. 16: Clipping Steering Wheel Cover Into Retaining Clips
Courtesy of BMW OF NORTH AMERICA, INC.

LOWER SECTION OF STEERING COLUMN COVER

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

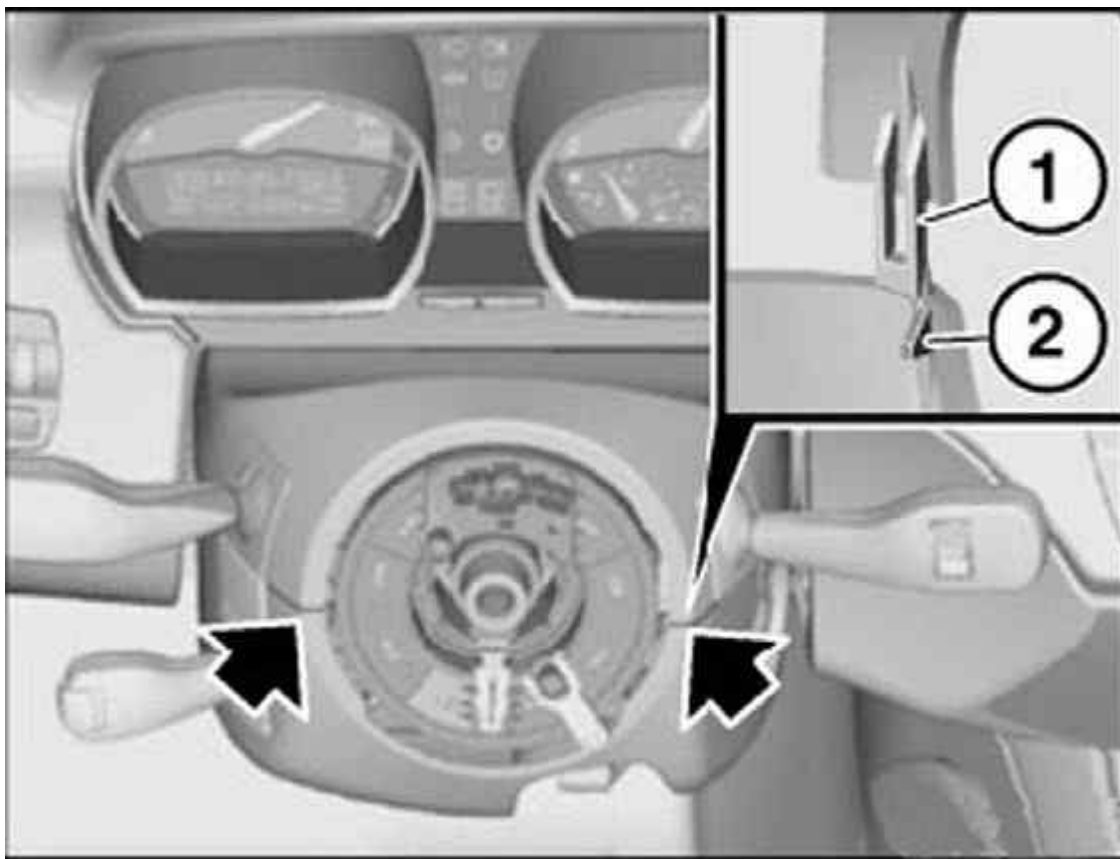
Move steering column in "bottom" and "extended" position. Remove steering wheel. See **STEERING WHEEL** . Release screw. Open adjusting lever. Detach cover in rear area downwards and unclip. See **Fig. 17** .



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Fig. 17: Detaching Cover In Rear Area Downward & Unclipping
Courtesy of BMW OF NORTH AMERICA, INC.

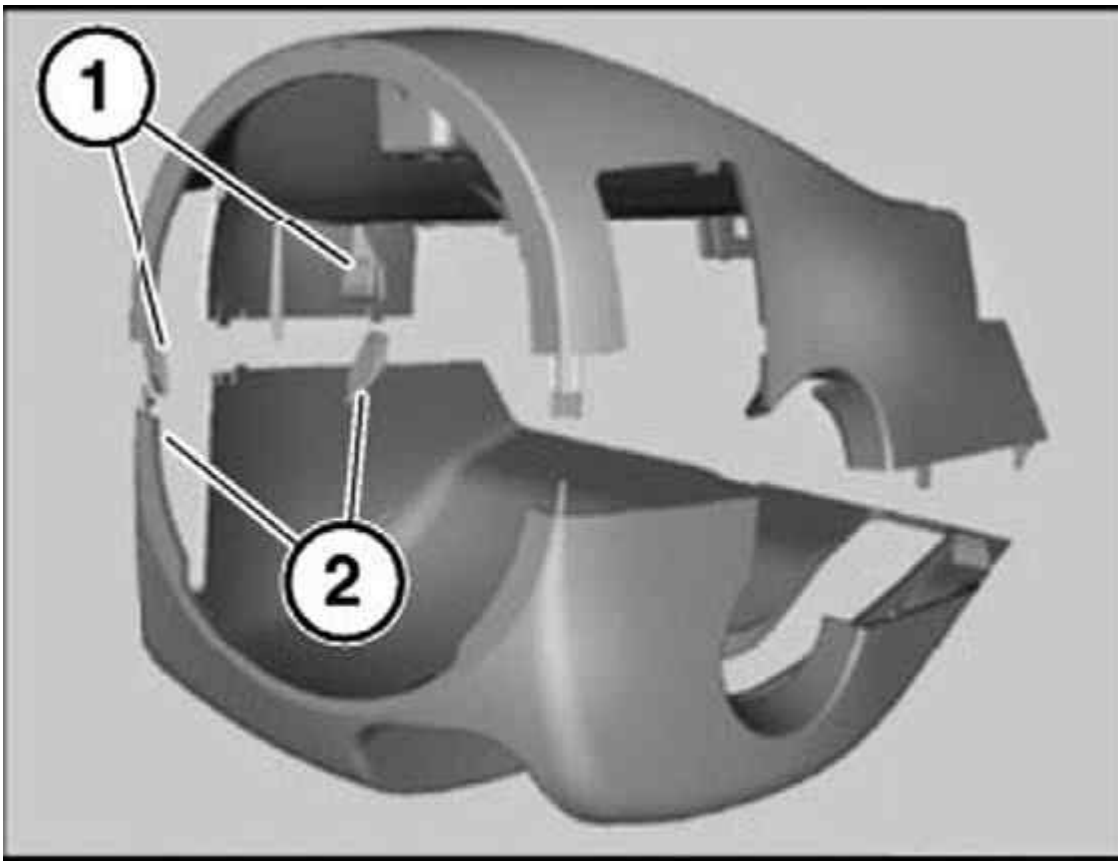
Move plastic wedge from front between upper and lower sections. Press lock (1) on left and right out of hook (2). See **Fig. 18** . Pull off lower section of steering column cover towards bottom. Do not scratch steering column cover. Do not damage locks.



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Fig. 18: Pressing Lock On Left & Right Out Of Hook
Courtesy of BMW OF NORTH AMERICA, INC.

During installation, locks (1) must snap into place in hooks (2) on left and right. See **Fig. 19** .



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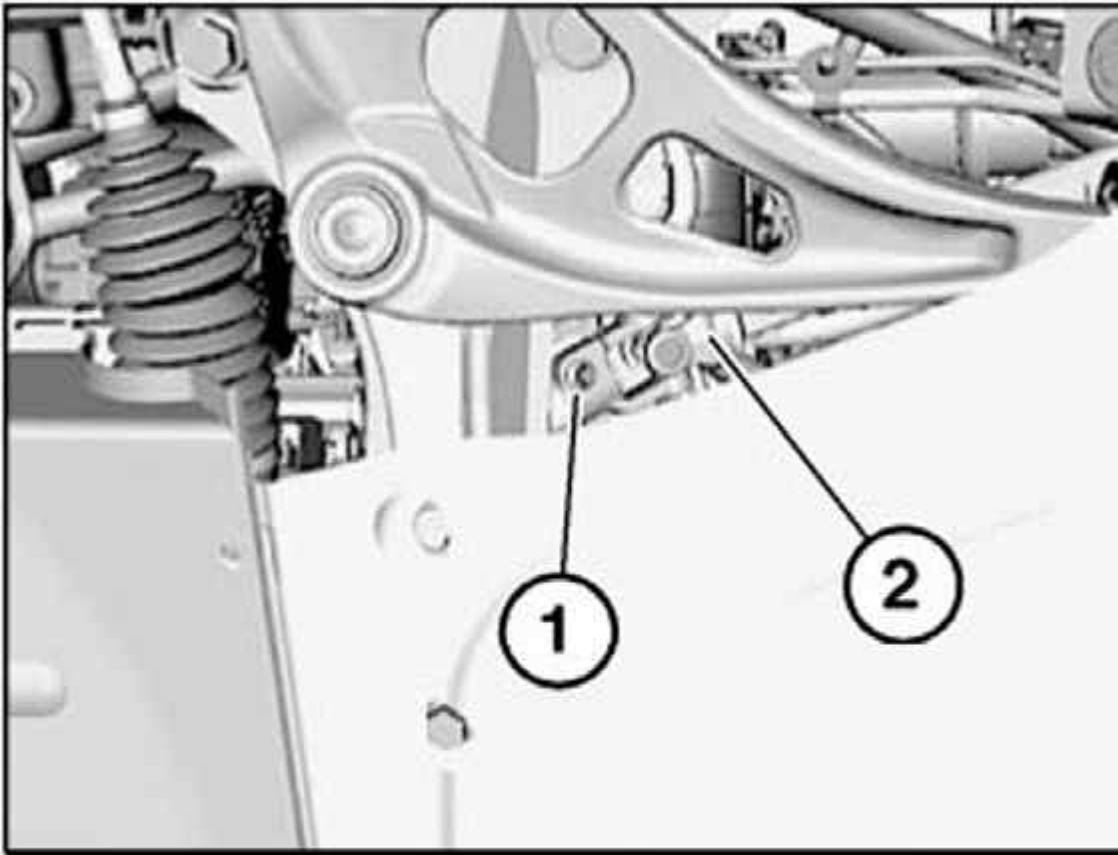
Fig. 19: Ensuring Locks Snap Into Place In Hooks
Courtesy of BMW OF NORTH AMERICA, INC.

LOWER SECTION OF STEERING SPINDLE

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

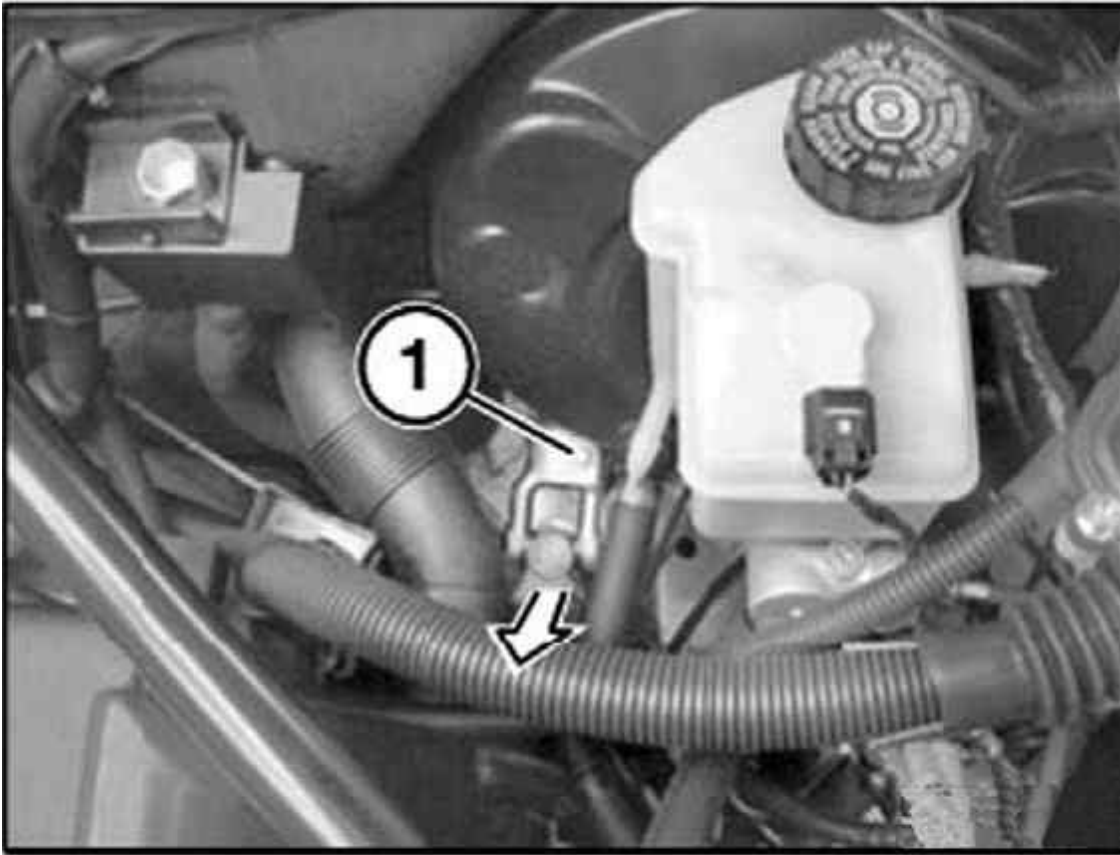
If the lower section of the steering spindle is separated from the power steering gear, this can result in damage to the contact ring when the steering wheel is turned. Release clamping screw (1). Move front wheels to straight-ahead position and remove ignition key. Detach lower section of steering spindle (2) from steering gear. See **Fig. 20** . During installation, lower section of steering spindle can only be attached in one position to the power steering gear. Recut thread. Replace clamping screw. Tighten to specification. See **TORQUE SPECIFICATIONS** .



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Fig. 20: Identifying Clamping Screw & Steering Spindle
Courtesy of BMW OF NORTH AMERICA, INC.

Release clamping screw (1). See **Fig. 21** . Detach lower section of steering spindle from steering column and remove. During installation, lower section of steering spindle can only be attached in one position to the power steering gear. Recut thread. Replace clamping screw. Tighten to specification. See **TORQUE SPECIFICATIONS** .



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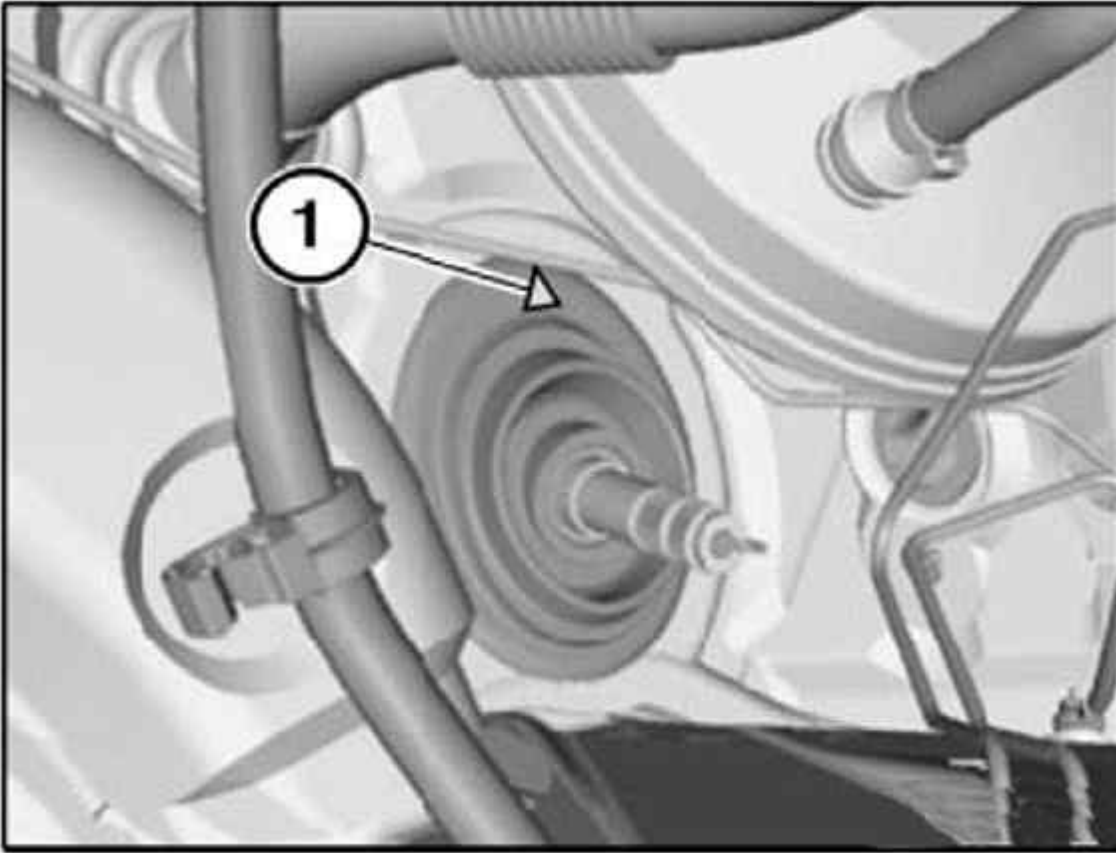
Fig. 21: Identifying Clamping Screw
Courtesy of BMW OF NORTH AMERICA, INC.

STEERING SPINDLE SLEEVE

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

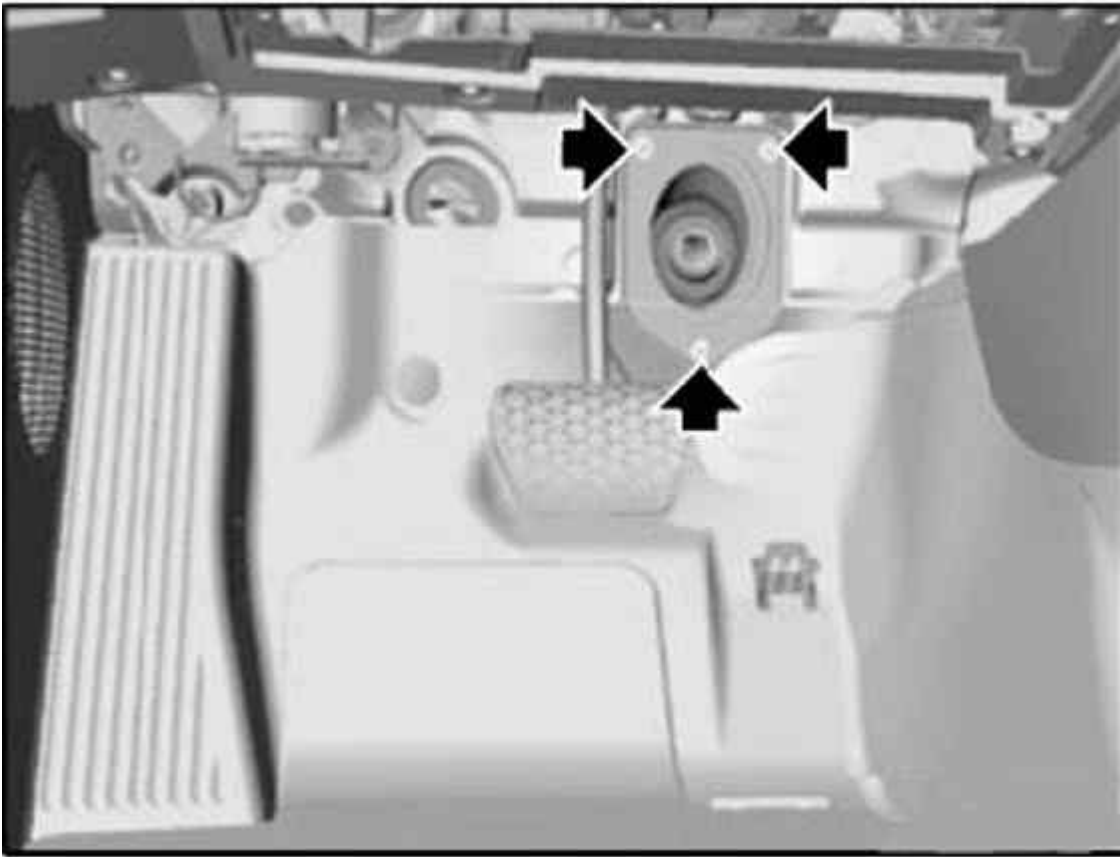
If the lower section of the steering spindle is separated from the power steering gear, this can result in damage to the contact ring when the steering wheel is turned. Remove lower section of steering spindle. See **LOWER SECTION OF STEERING SPINDLE** . Remove sleeve from bulkhead. During installation, make sure sleeve is correctly seated. Marking (1) must point vertically upwards. See **Fig. 22** .



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Fig. 22: Ensuring Mark Points Upward
Courtesy of BMW OF NORTH AMERICA, INC.

When removing holder for sleeve, remove complete steering column. See **STEERING COLUMN** . If necessary, remove accelerator pedal module. Fold floor covering in area of holder towards rear. Release nuts and remove holder. See **Fig. 23** . During installation, check seating of sleeve in bulkhead and holder. Reattach sleeve if necessary.



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Fig. 23: Releasing Nuts & Removing Holder
Courtesy of BMW OF NORTH AMERICA, INC.

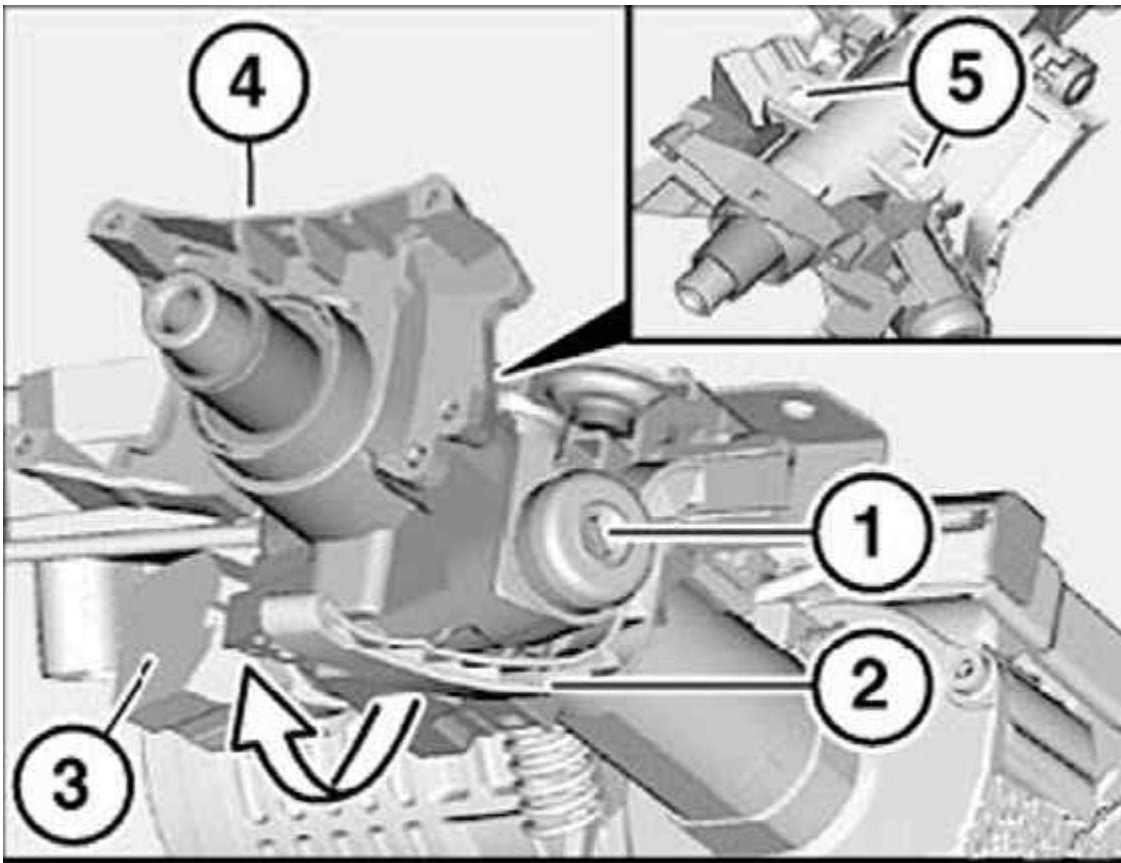
After installation, carry out steering angle sensor adjustment. See **STEERING ANGLE SENSOR** .

STEERING LOCK

NOTE: **Numbers in text refer to numbers in figures.**

Removal & Installation

Remove steering column stalk. See **STEERING COLUMN STALK** . If necessary, remove interlock cable. See **INTERLOCK CABLE** . Remove lock cylinder (1) with "O" ring. See **STEERING LOCK CYLINDER** . Remove ignition starter switch (3). See **IGNITION SWITCH** . Release shear screws (5) with a chisel. Open adjusting lever (2). Swivel front steering lock (4) downwards and then remove towards rear. During installation, tighten down shear screws (5) until screw heads are released.



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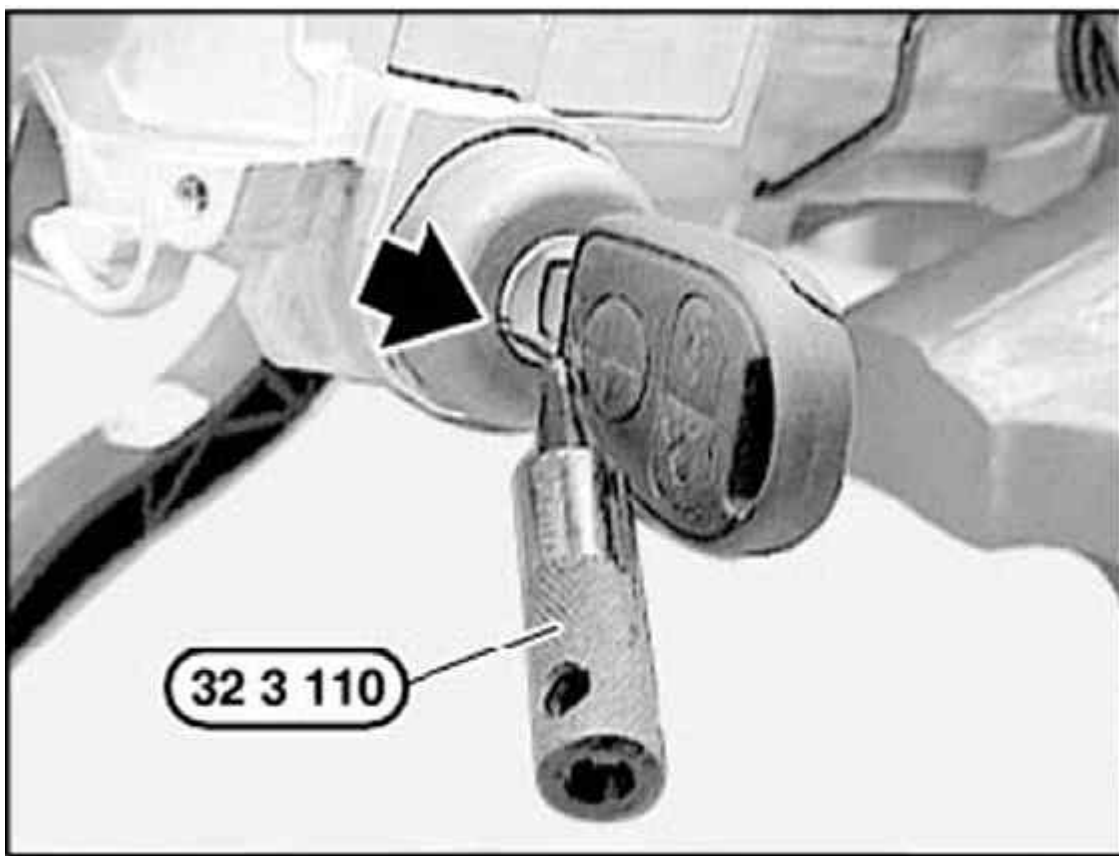
Fig. 24: Removing Complete Steering Lock
Courtesy of BMW OF NORTH AMERICA, INC.

STEERING LOCK CYLINDER

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

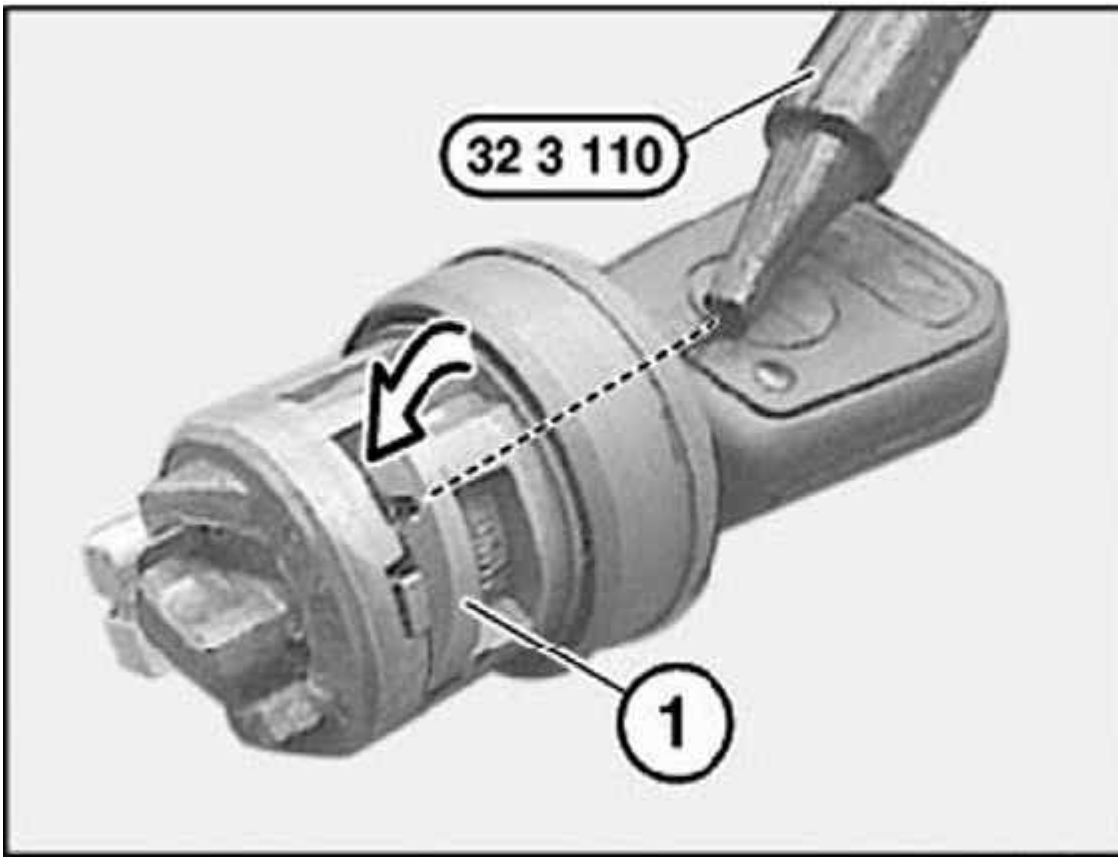
Remove steering column shroud. See UPPER SECTION OF STEERING COLUMN COVER and LOWER SECTION OF STEERING COLUMN COVER. Remove ring antenna. See RING ANTENNA OF ELECTRONIC IMMOBILIZER. With ignition lock key, turn lock barrel to required position "R" = radio, windshield wipers, etc. Press special tool (32 3 11) into locking cylinder hole and remove locking cylinder. See Fig. 25.



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Fig. 25: Removing Ignition Lock Key
Courtesy of BMW OF NORTH AMERICA, INC.

The lock (1) is unlocked with special tool (32 3 110) and the locking cylinder can now be removed. See **Fig. 26** . If necessary, turn special tool in hole.



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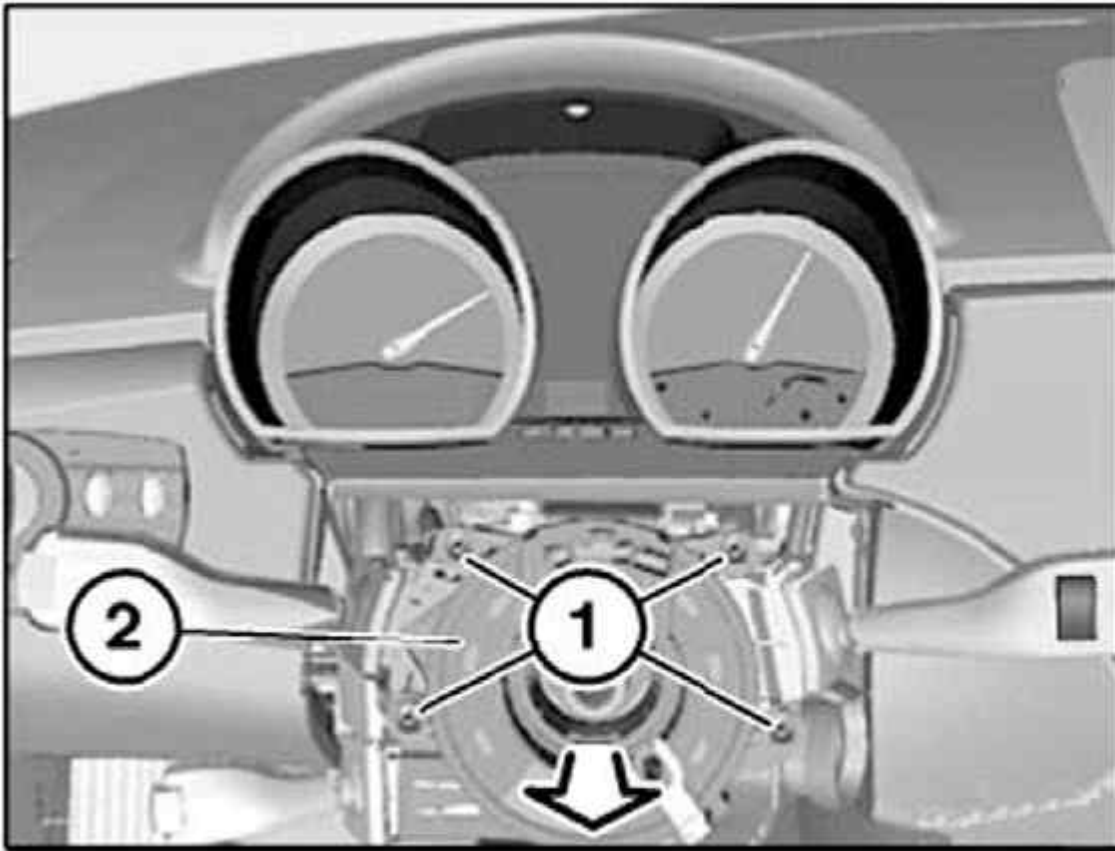
Fig. 26: Removing Locking Cylinder
Courtesy of BMW OF NORTH AMERICA, INC.

STEERING COLUMN STALK

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

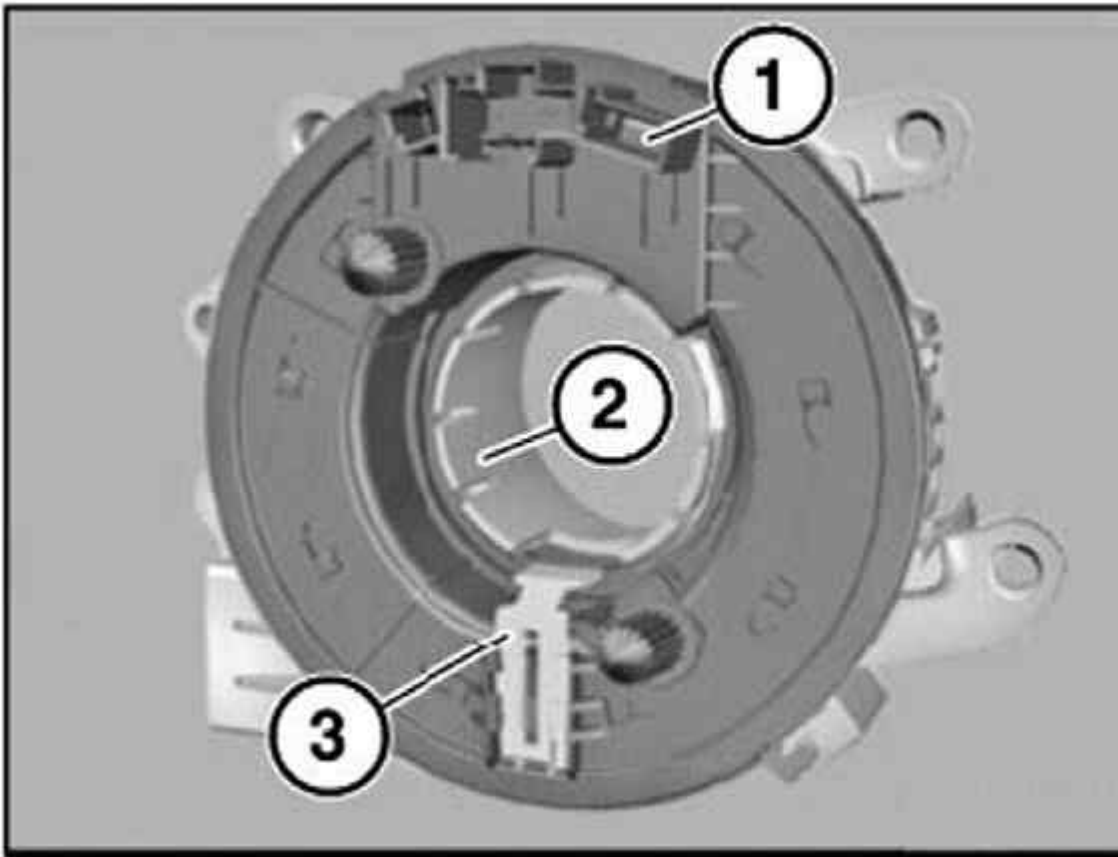
Move wheels into straight-ahead position and do not alter this position during the repair work. Remove steering wheel. See STEERING WHEEL . Remove steering column cover. See LOWER SECTION OF STEERING COLUMN COVER and UPPER SECTION OF STEERING COLUMN COVER . Do not under any circumstances twist the cover of the fixture for the steering column stalk (2) out of its centered position. Release screws (1). Pull back fixture for steering column stalk (2). Unlock associated plug connections and disconnect. Remove fixture for steering column stalk (2). See Fig. 27 .



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Fig. 27: Removing Screws & Pulling Back Fixture
Courtesy of BMW OF NORTH AMERICA, INC.

When removed, the cover (1) of the fixture for the steering column stalk (2) is secured against turning/twisting by the lock (3). Do not under any circumstances twist the cover (1) out of its centered position against the fixture for the steering column stalk (2). See **Fig. 28** .



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Fig. 28: Identifying Cover

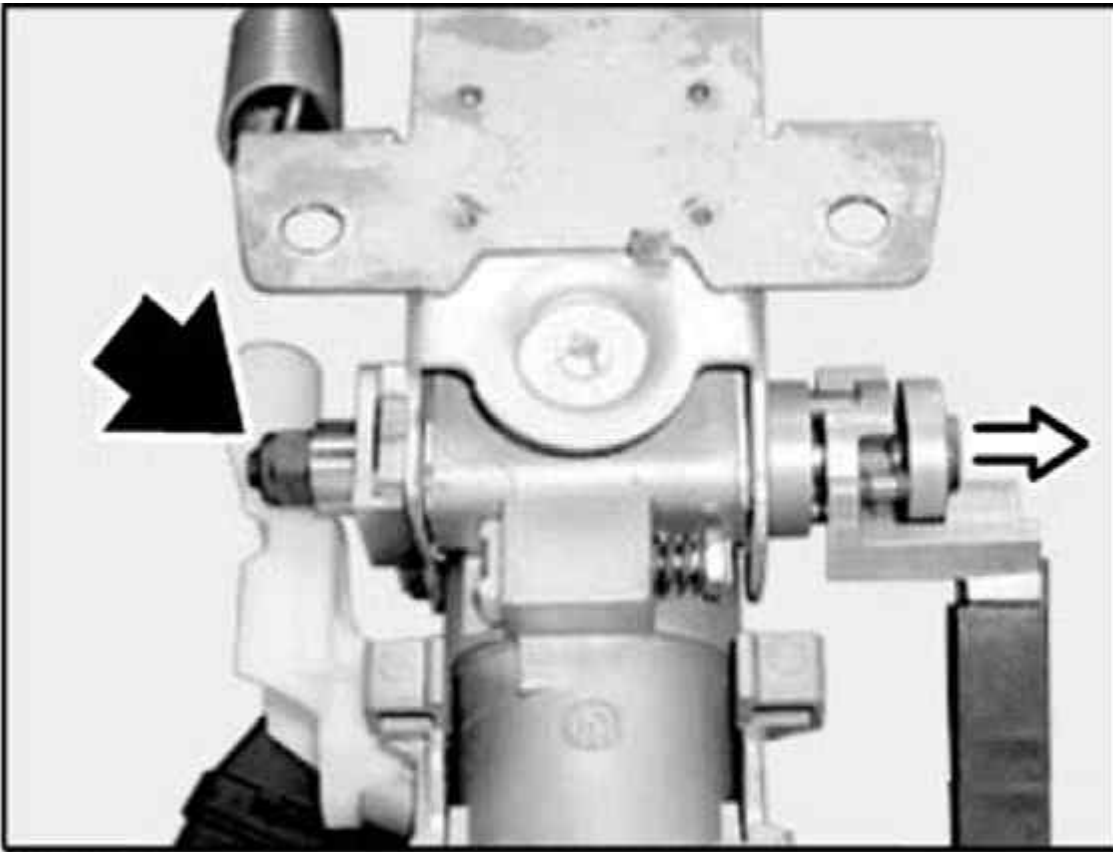
Courtesy of BMW OF NORTH AMERICA, INC.

REPLACING ADJUSTING LEVER FOR STEERING COLUMN

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

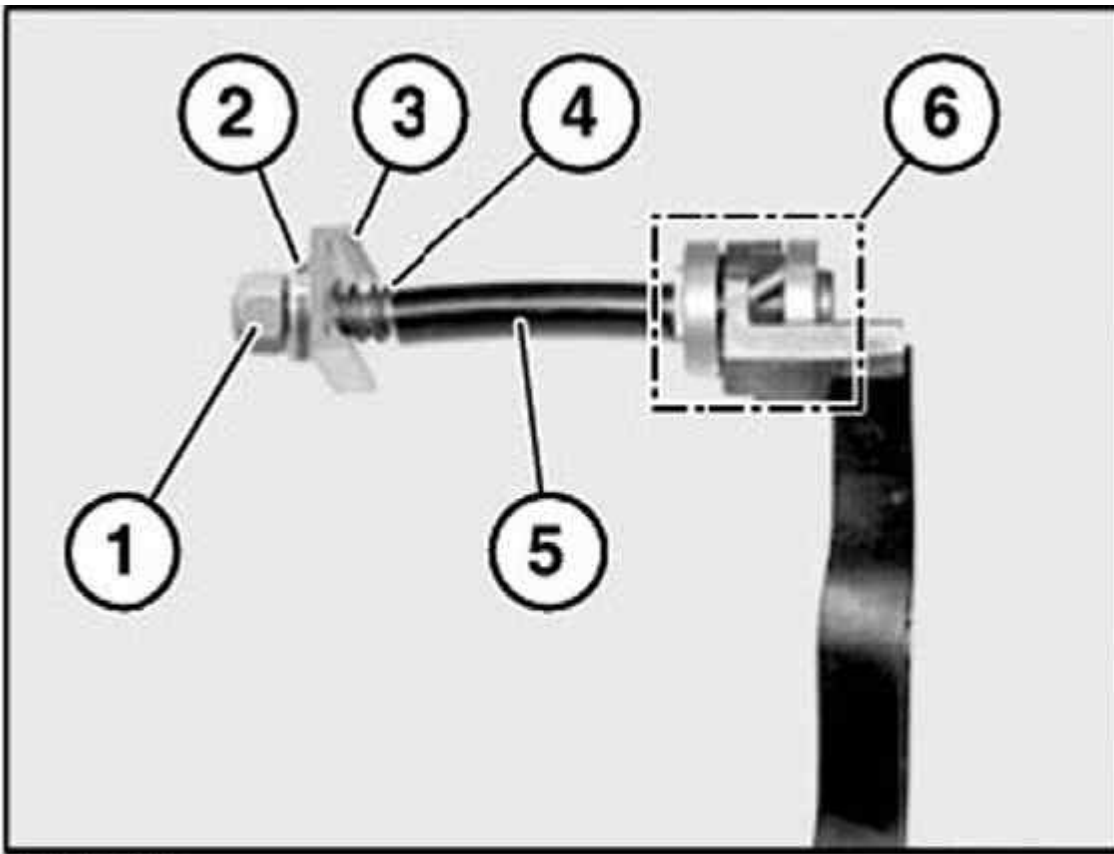
Remove steering column. Slacken nut. See **Fig. 29** . Secure clamping bearing (by hand, adhesive tape).



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Fig. 29: Identifying Nut**Courtesy of BMW OF NORTH AMERICA, INC.**

Remove nut (1), needle bearing (2), slide (3) and compression spring (4). Pull out adjusting lever. During installation, adjusting lever unit is supplied in assembled state with a transportation lock (5). Remove transportation lock (5) and install preassembled adjusting lever. Clamping bearing (6) must be secured while transportation lock (5) is being removed until insertion into steering column. Incorrect assembly will result in malfunction. See **Fig. 30** .

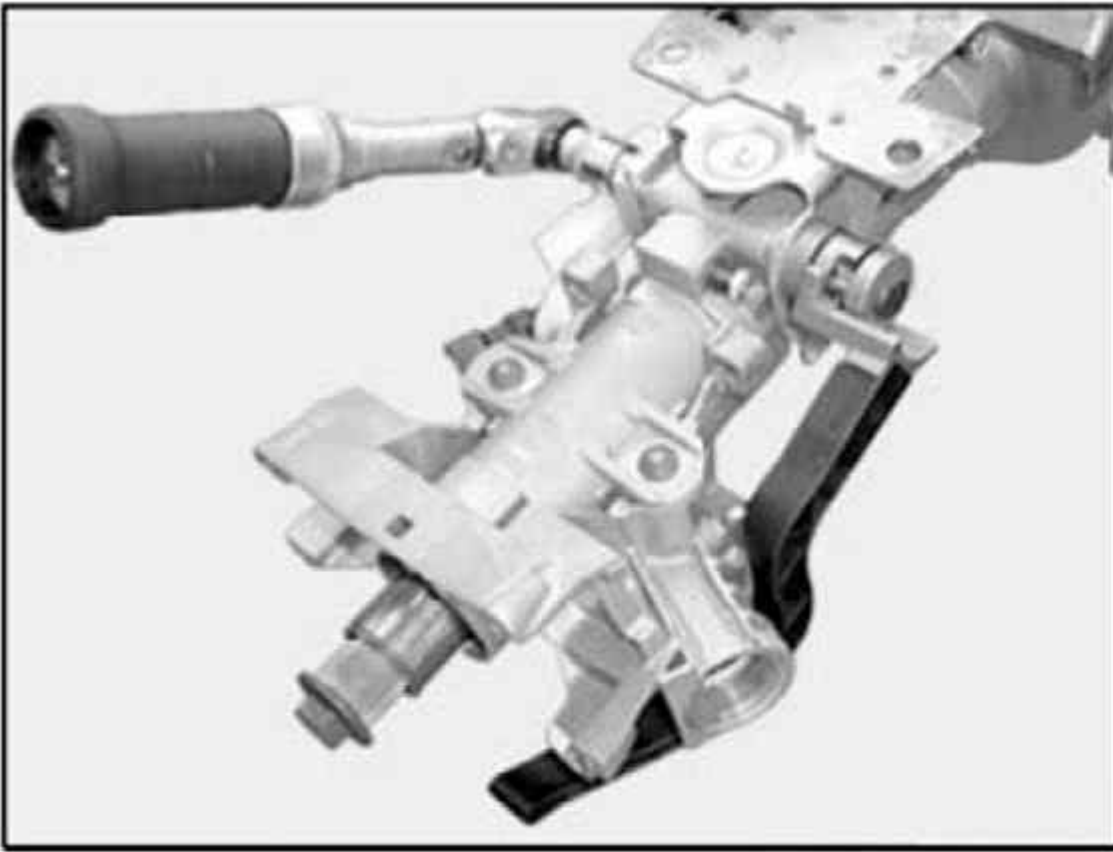


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Fig. 30: Identifying Nut (1), Needle Bearing (2), Slide (3), Compression Spring (4), Transportation Lock (5) & Clamping Bearing (6)

Courtesy of BMW OF NORTH AMERICA, INC.

Replace nut. Screw on nut a few turns. Move adjusting lever into locked position. Tighten nut to correct torque. See **TORQUE SPECIFICATIONS** . Clamping force is adjusted by means of the tightening torque.



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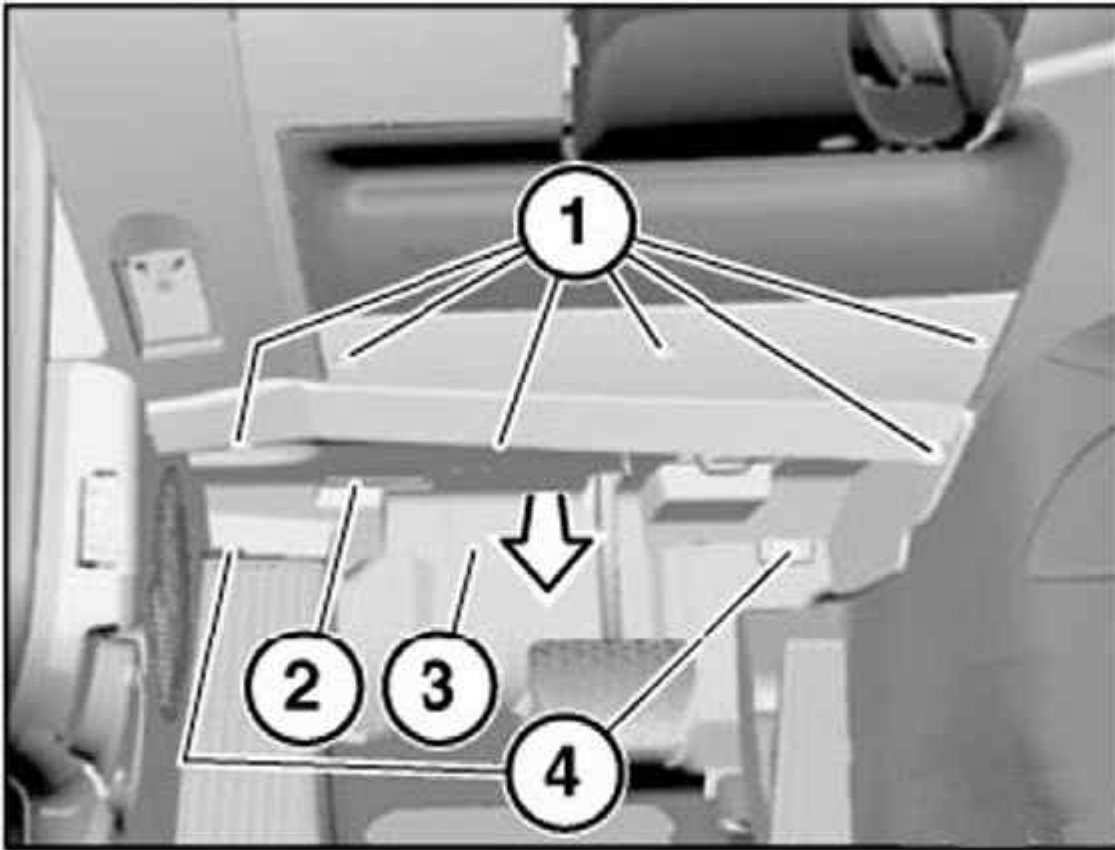
Fig. 31: Moving Adjusting Lever Into Locked Position
Courtesy of BMW OF NORTH AMERICA, INC.

PEDAL ASSEMBLY TRIM

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

Release screws (1). Pull back panel for pedals (3) in direction of arrow. Disconnect footwell light plug connection (2) and remove panel for pedals (3). During installation, make sure guides (4) of panel for pedals (3) are correctly seated in associated mountings. Make sure panel for pedals (3) is correctly seated on footwell vent above. See **Fig. 32** .



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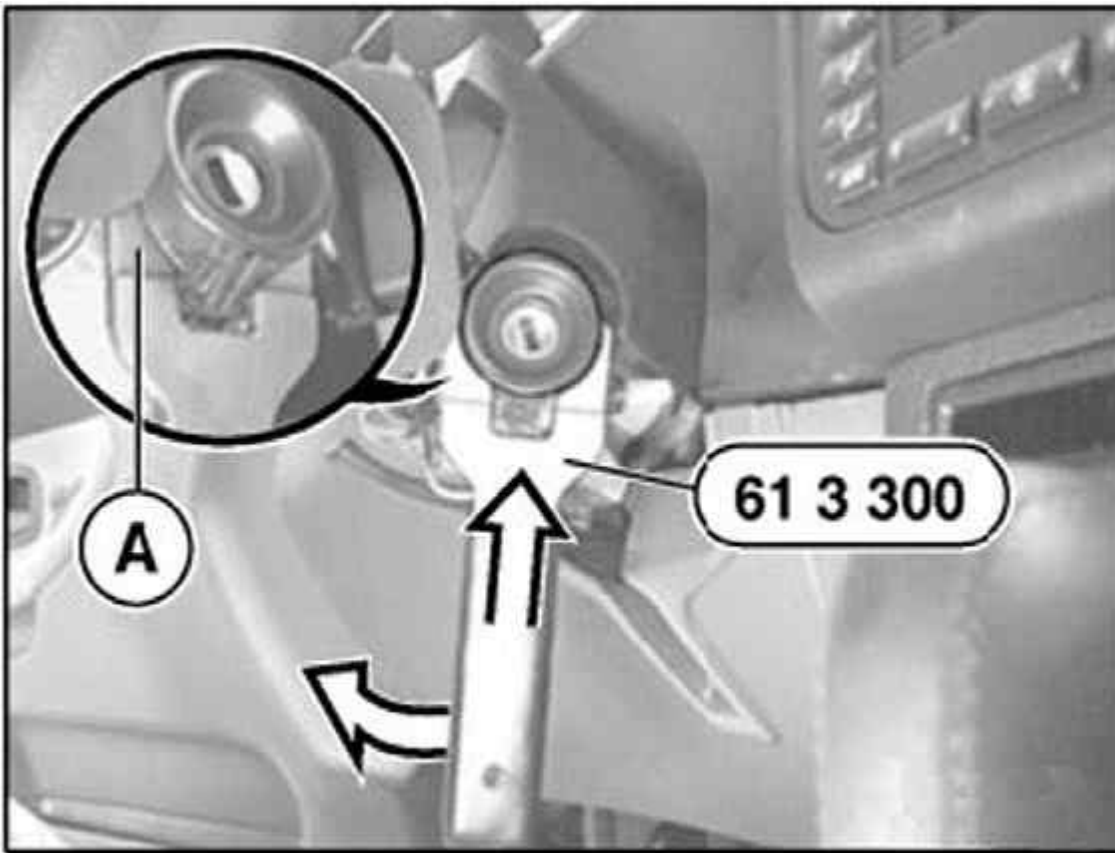
Fig. 32: Identifying Pedal Assembly Trim
Courtesy of BMW OF NORTH AMERICA, INC.

RING ANTENNA OF ELECTRONIC IMMOBILIZER

NOTE: Numbers or letters in text refer to numbers in figures.

Removal & Installation

Remove upper section of steering column trim. See **UPPER SECTION OF STEERING COLUMN COVER** . Slide in special tool (61 3 300) with flattened end (A) facing ring antenna and lever out ring antenna. See **Fig. 33** .



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Fig. 33: Identifying Ring Antenna

Courtesy of BMW OF NORTH AMERICA, INC.

STEERING WHEEL

Removal & Installation

Remove airbag unit. See **AIR BAG UNIT** . Move steering wheel to straight-ahead position. Release nut and remove steering wheel. See **Fig. 34** . If necessary, modify switch unit.

2005 BMW Z4

2003-05 STEERING Steering Columns - Z4

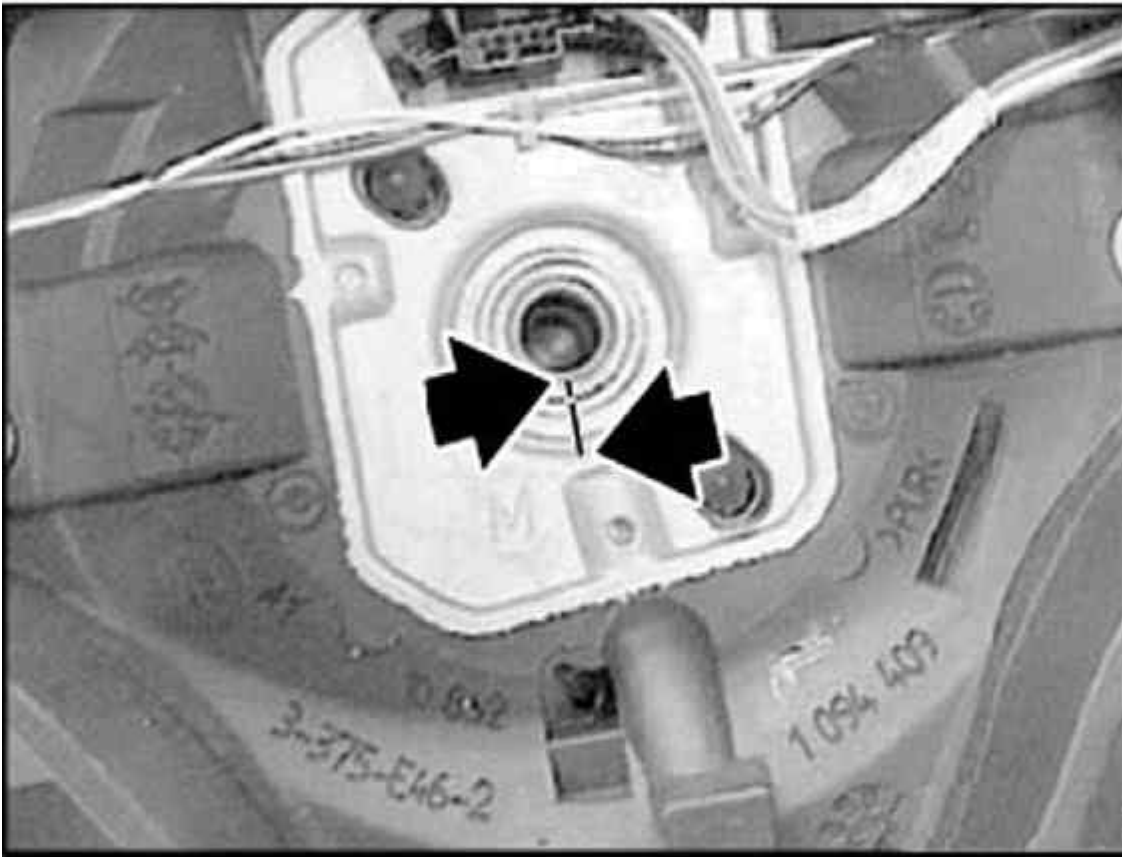


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Fig. 34: Removing Steering Wheel

Courtesy of BMW OF NORTH AMERICA, INC.

During installation, move steering wheel/wheels to straight-ahead position. Fit steering wheel. The markings on the steering wheel and the steering spindle must match. See **Fig. 35** . See **TORQUE SPECIFICATIONS** .



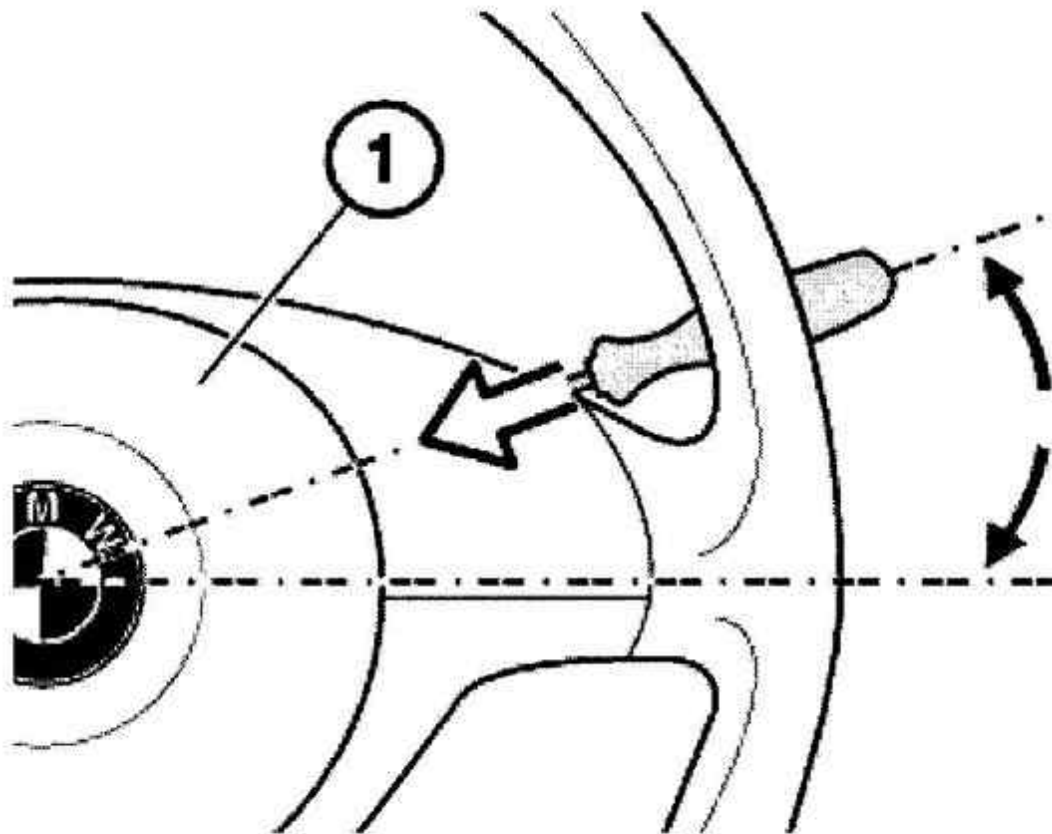
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Fig. 35: Installing Steering Wheel

Courtesy of BMW OF NORTH AMERICA, INC.

AIR BAG UNIT**NOTE:** Numbers in text refer to numbers in figures.**Removal & Installation**

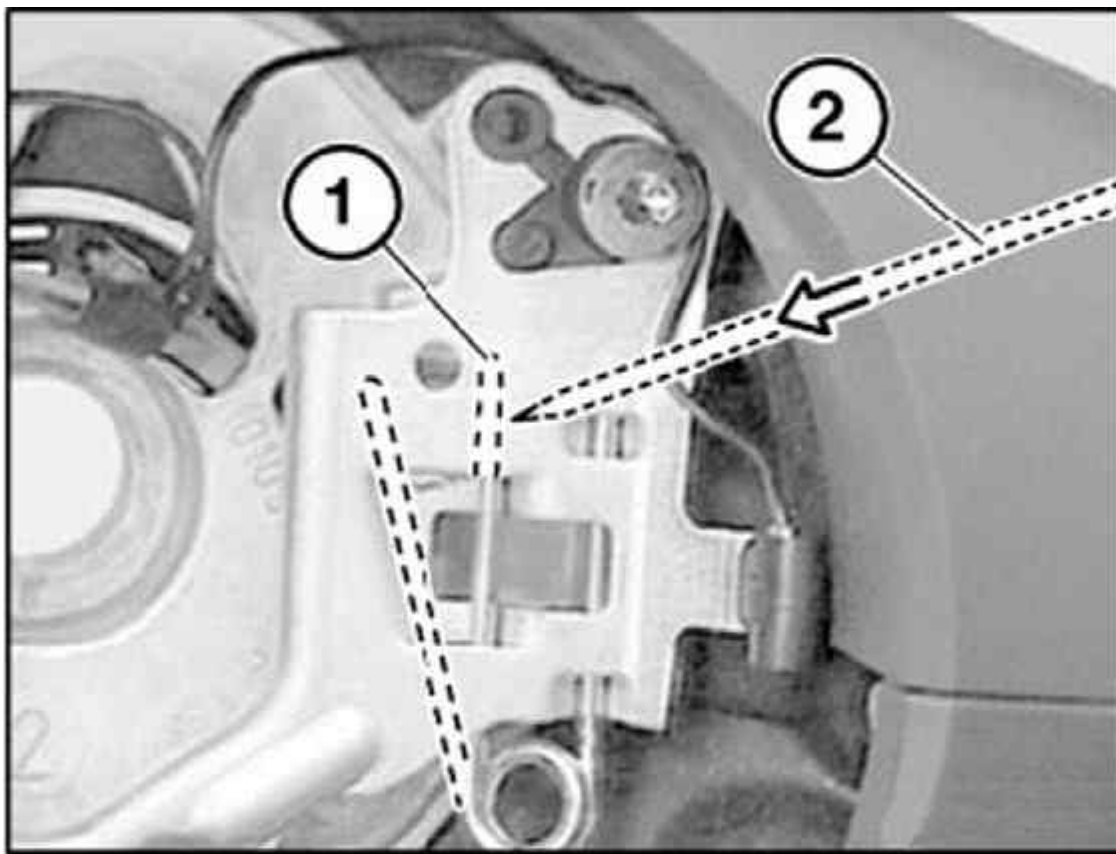
Disconnect battery negative terminal and cover. Insert a screwdriver through opening on rear side of steering wheel and press down on lock. If a springy resistance can be felt, press down lock as far as it will go and pull airbag unit (1) away from steering wheel. See **Fig. 36** . Repeat procedure on opposite side. For purposes of clarity, the procedure is shown with the airbag unit already removed.



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Fig. 36: Pulling Airbag Unit Away From Steering Wheel
Courtesy of BMW OF NORTH AMERICA, INC.

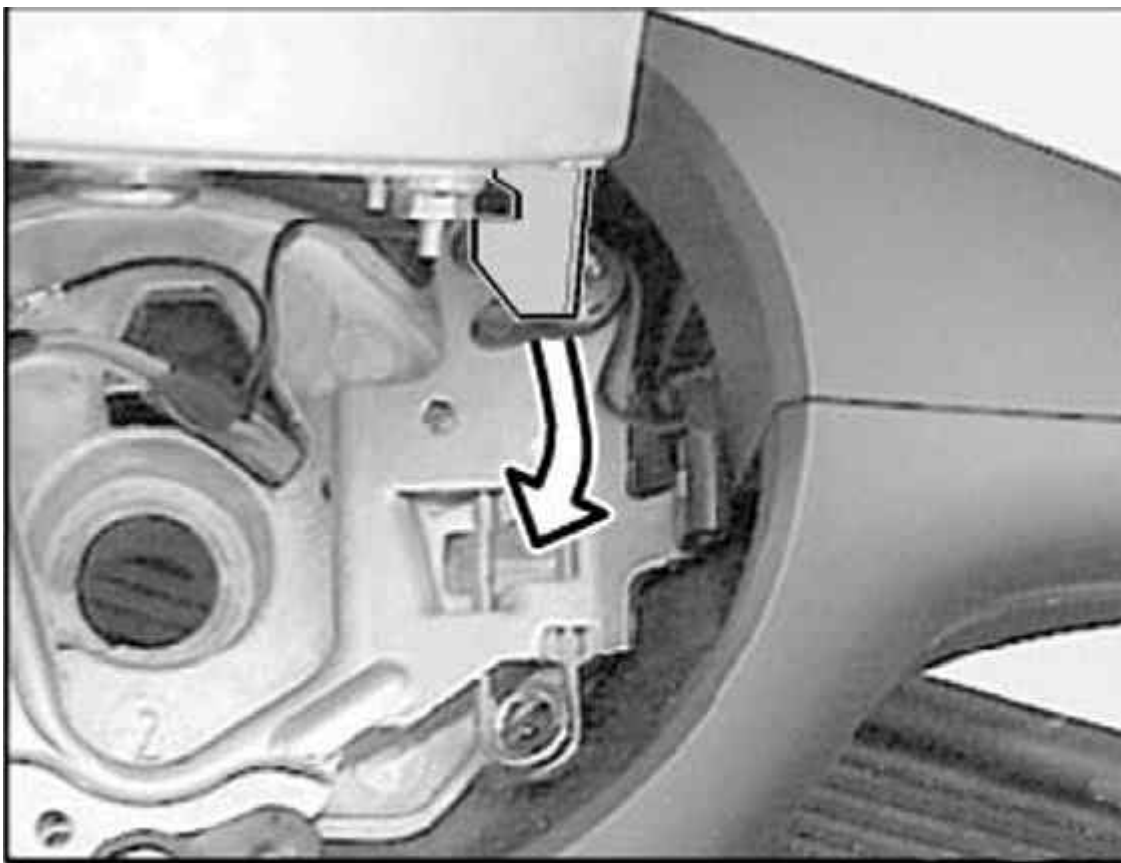
Using screwdriver (2), press down on lock (1). See **Fig. 37** .



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Fig. 37: Using Screwdriver To Press Down On Lock
Courtesy of BMW OF NORTH AMERICA, INC.

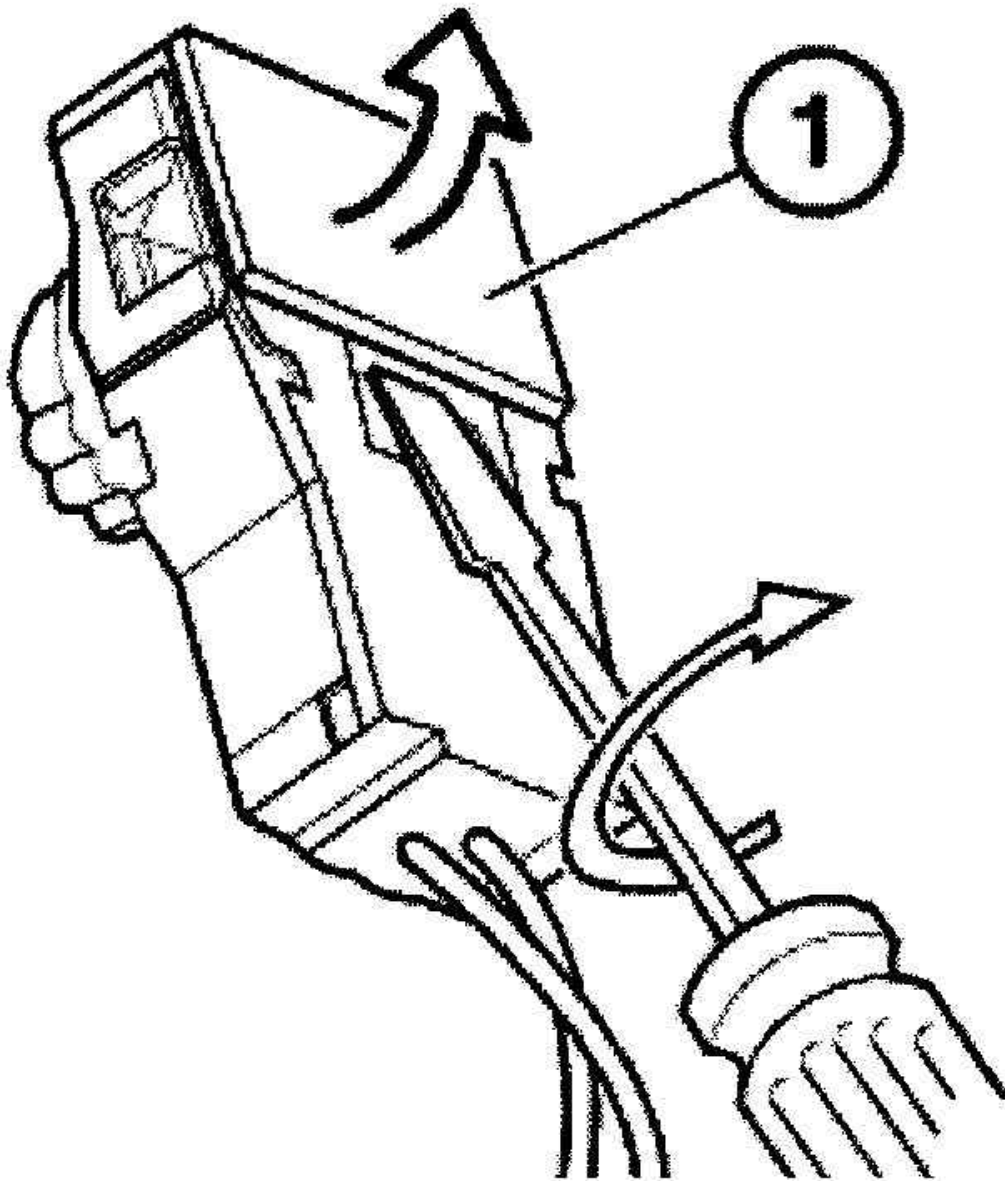
During installation, insert airbag unit with hooks into locks and press into steering wheel. See **Fig. 38** .



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Fig. 38: Inserting Airbag Unit With Hooks Into Locks
Courtesy of BMW OF NORTH AMERICA, INC.

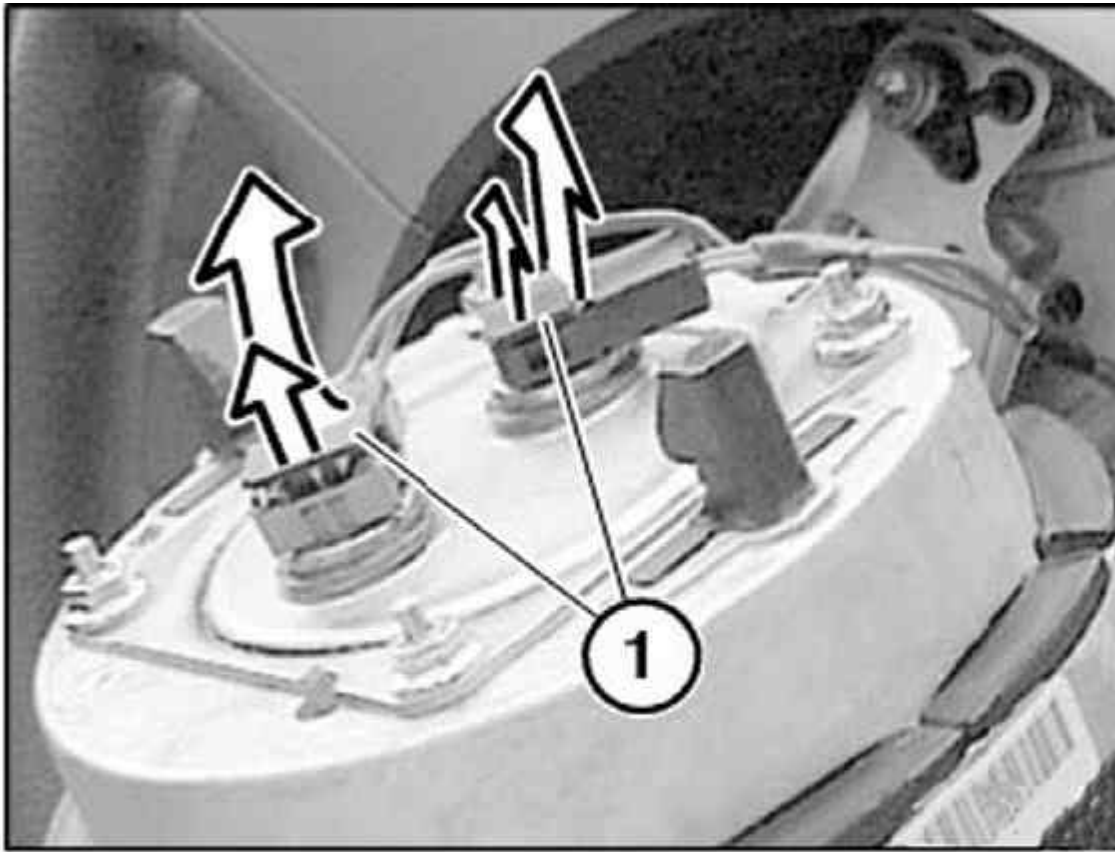
Unlock airbag plug connection. Lever out lock (1) with a screwdriver. See **Fig. 39** .



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Fig. 39: Levering Out Lock With Screwdriver
Courtesy of BMW OF NORTH AMERICA, INC.

Open locks (1) on both plugs and disconnect plug connections. Remove airbag unit. Note that airbag unit may only be put down with the impact pad facing upward. See [Fig. 40](#).



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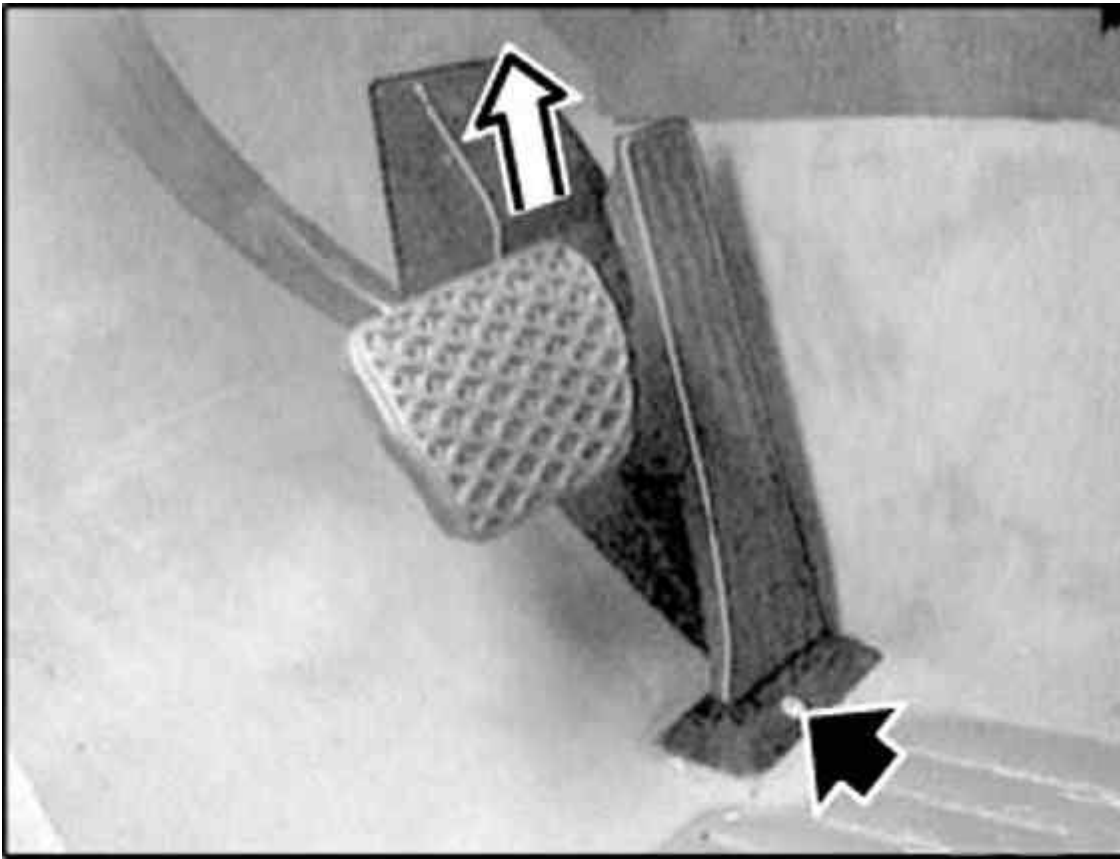
Fig. 40: Opening Locks & Disconnecting Plug Connectors
Courtesy of BMW OF NORTH AMERICA, INC.

ACCELERATOR PEDAL MODULE

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

Take off cap. Unscrew screw. Pull accelerator pedal module upwards out of fixture.

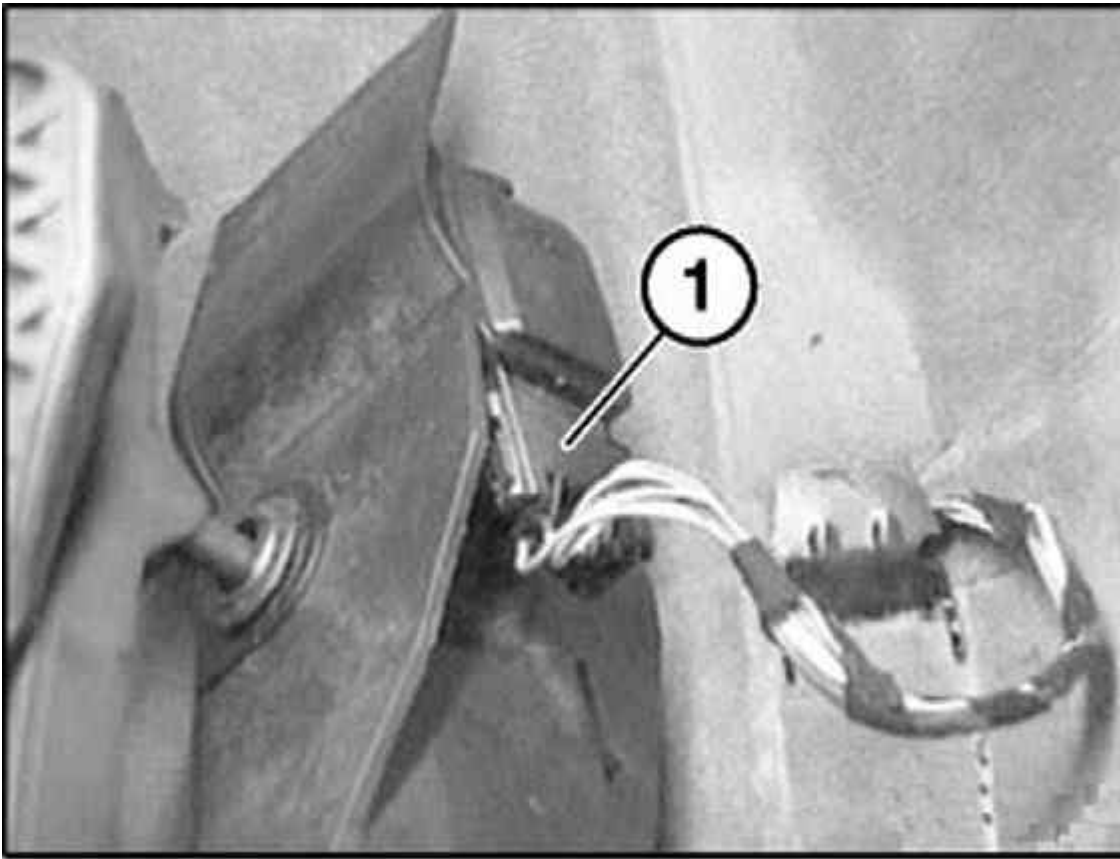


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Fig. 41: Removing Cap

Courtesy of BMW OF NORTH AMERICA, INC.

Pull off plug (1). Remove accelerator pedal module. See **Fig. 42** . Accelerator pedal module can only be replaced completely with adapter plate. See **TORQUE SPECIFICATIONS** .



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Fig. 42: Removing Accelerator Pedal Module
 Courtesy of BMW OF NORTH AMERICA, INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Accelerator Pedal Module To Body	14 (19)
Steering Wheel To Steering Column	
Nut	59 (80)
Screw	46 (63)
Universal Joint/Coupling To Steering Gear/Steering Spindle	22 (30) ⁽¹⁾
INCH Lbs. (N.m)	
Hexagon Screw To Bearing Block For Steering Column Adjustment	
Adjusting Lever Without Needle Bearing	53 (6)
Adjusting Lever With Needle Bearing	28 (3.2)
Sleeve Holder To Body	22 (2.5)

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(1) Replace clamping screw. Recut thread in cardan universal joint.